

# APP LO STUDY CENTRE

**TNPSC GROUP I MAIN - 2021**  
**PREMODEL EXAM - V (HOME TEST)**  
**PAPER - 3 - UNIT I GEOGRAPHY & UNIT II ENVIRONMENTAL SCIENCE**

Time: 3 hours

Total marks: 250

**SECTION A**

5 x 10 = 50

Answer all the questions. Answer not exceeding 150 words each

**PAPER 3 - UNIT I - GEOGRAPHY**

1. Give a detailed account on the bottom relief features the of the Indian Ocean.  
இந்திய பெருங்கடலடி நிலத்தோற்றங்களின் சிறப்பம்சங்கள் குறித்து விளக்கமாக எழுதுக

**Bottom Relief of the Indian Ocean**

The Indian Ocean has continental shelf of varying width. Continental shelf along the coast of Arabian Sea, the Bay of Bengal and Andaman varies in width from 192km to 280km. A variety of coral reefs thrive in the warm tropical water of the Indian Ocean.

Indian Ocean has a continuous central ridge called the Arabic Indian ridge. Other important ridges include the East Indian ridge, West Australian ridge, South Madagascar ridge. Basins of Indian Ocean include Comoro basin, North Australian basin, South Indian basin and the Arab basin (Figure 5.11).

The average depth of the Indian Ocean is 3890m. Sunda deep near Java is the deepest part of this ocean (7450m). Madagascar and Sri Lanka are the most prominent islands present in Indian Ocean. Andaman and Nicobar islands in the Bay of Bengal are the raised part of mountains that are the extension of Arakan Yoma which forms a part of Himalayas. Reunion Island is located on a Hot spot.

2. What is ocean current? What are the factors of ocean current?  
கடல் நீரோட்டம் என்றால் என்ன? கடல் நீரோட்டத்தின் காரணிகள் யாவை?

**Ocean currents**

Large mass of moving water from one part of the ocean to another in a definite direction is called as ocean current. The movement is produced due to earth's rotation, temperature difference of ocean water, salinity, density and some extent due to air pressure and winds. Ocean currents can be classified on the basis of mode of origin, volume and velocity and boundaries.

In the order of velocity ocean currents can be classified as drifts, currents and streams. Drifts are movement of surface water of low velocity influenced by prevailing winds, currents are movement of oceanic water in definite direction and greater velocity and streams are larger mass of water moving in a definite direction and much greater velocity than the drifts and currents. Ocean currents are distinguished by the temperature they possess. When ocean currents originate from equator it is termed as warm current. Likewise when a current starts from polar region it is termed as cold current.

Vertical circulation of ocean water takes place due to difference in salinity and temperature between the surface and the water deep below. Upwelling is an oceanographic phenomenon that involves movement of dense, cooler, and usually nutrient-rich water towards the ocean surface, replacing the warmer, usually nutrient-depleted surface water. Downwelling is the process of accumulation and sinking of cold high saline water beneath warmer or fresher water.

3. Give a detailed account on the linguistic and racial groups of India.

இந்தியாவின் மொழியியல் மற்றும் இனக்குழுக்கள் பற்றி விரிவாக எழுதுக

### Races

The race is a group of people with more or less permanent distinguishing characteristics. There are skin colour and hair colour to which persons concerned attach certain interpretations. Objectives and scientific classification are the division of mankind in to racial groups should be done on the basis of measurable physical features and qualities inherited from a common ancestor. The important features on the basis of which the races are identified and classified include skin colour, stature, shape of head, face, nose, eye, type of hair, and blood group. Human races are classified in to four broad groups:

1. Negroid, 2. Caucasoid, 3. Mongoloid and 4. Australoid.

### HOTS

If human being originated from one point, Africa and spread to rest of the world, how could they become different races?

#### 1. The Negroid

They are usually called as "black race". They have the darkest skin tone than other races, and other common characteristics are the sloped forehead, thick lips, wide nose, and dark hairs. They are living in Sub-Sahara Africa.

#### 2. The Mongoloid

They have the folding eye lids, almond shaped eyes, yellowish skin tone, and V shaped cheeks. Native Americans and Eskimo are also classified as Mongoloid. Compared to the other races, they have the least body hair, least body odour, and smallest limb ratio. Their facial structure is likely to adapt cold mild wind. They are living in East Asia.

#### 3. The Caucasoid

The Caucasoid is known as "white people" characterised by the pointy nose, vertical forehead, pinkish/orange skin tone, visible brow ridge, and colorful eyes/hair. Some believe that their light skin tone is meant to receive more sunlight due to Europe's climate.

Some believe that their nose structure is meant to keep the nose moisture from getting dried by the wind. They are living in Europe and Middle East.

#### 4. Australoid Race

They have visible eye ridge, wide nose, curly hair, dark skin tone, and short in height. Some believe that their visible ridge helps them to eat stiff foods. They are living in Australia and Papua New Guinea.

#### Major Languages of India

India has a rich Linguistic heritage and has heterogeneous ethnic and social groups, which have their own languages and dialects. According to census of India 1961, there were 187 languages spoken by various sections of Indian society. 23 major languages were spoken by about 97 percent population of the country. 22 languages excluding English are mentioned in the eighth schedule of the constitution of India as follows; Kashmiri, Punjabi, Hindi, Urdu, Bengali, Assamese, Gujarati, Marathi, Kannada, Tamil, Telugu, Malayalam, Sindhi, Sanskrit, Oriya, Nepali, Kongani, Manipuri, Bodo, Dogri, Maithili and Santali of these languages, 14 were initially included in the Constitution. Subsequently, Sindhi was added in 1967 by 21st constitutional amendment act; Konkani, Manipuri and Nepali were added in 1992 by 71st Constitutional Amendment Act; and Bodo, Dogri, Maithili and Santali were added in 2003 by 92nd Constitutional Amendment Act. Indian Languages belong mainly to four linguistic families

- Austric - Munda, Mon-Khmer
- Dravidan - Tamil, Telugu, Kannada, Malayalam, Gondi, kurukh, olean, etc.
- Sino- Tibetan- Bodo, Karen, Manipuri, etc.
- Indo - Aryan - Hindi, Urdu, Sans.

#### Dialect

A distinct linguistic form peculiar to a region or social group but which nevertheless, can be understood by speakers of other forms of the same language. The two main types of dialects are the **geographic dialect**, spoken by the people of the same area or locality, and the **social dialect** used by people of the same social class, educational level or occupational group.

#### Major dialects in India

More than 40 languages or dialects in India are considered to be endangered and are believed to be heading towards extinction as only a few thousand people speak them officials said.

According to a report of the census Directorate, there are 22 scheduled languages and 100 non -scheduled languages in India. The scheduled languages are 11 from Andaman and Nicobar, Seven from Manipur and Four from Himachal Pradesh. There are 42 languages spoken by less than 10,000 people. Some other languages also are in endangered position in India.

#### Major dialects in Tamil Nadu

Tamil is an interesting language with a range of native dialects. The language has several charming improvisations in different regions of the state. Many people are familiar with the old and familiar dialects of Tamil such as Chennai, Coimbatore, Madurai and Tirunelveli

**UNESCO'S five levels of language risk:**

Safe: Widely spoken

Vulnerable: Not spoken by children outside the home (600 languages)

Definitely endangered: Children not speaking (646 languages)

Severely endangered: Only spoken by oldest generations (527 languages)

Critically endangered: Spoken by only a few members of the oldest generation, often semi-speakers (577 languages)

**4. Give a detailed account on the mineral distribution of Tamilnadu.**

தமிழ்நாட்டில் தாதுக்கள் பரவல் குறித்து விவரித்து எழுதுக

**Mineral Resources**

Tamil Nadu is the leading holder of country's resources of vermiculite, magnetite, dunitite, rutile, garnet, molybdenum and ilmenite. The state accounts for the country's 55.3% of lignite, 75% of vermiculite, 69% of dunitite, 59% of garnet, 52% of molybdenum and 30% of titanium mineral resources.

Important minerals are found in the state are as follows: Neyveli has large lignite resources. Coal is also available in Ramanathapuram. Oil and gas are found in the Cauvery basin.

Iron deposits are found in Kanjamalai region in Salem district and Kalrayan Malai region of Tiruvannamalai district. Magnesite ores are available near Salem. Bauxite is found in Servarayan Hills, Kotagiri, Udagamandalam, Palani and Kollimalai areas. Gypsum is obtained in Tiruchirappalli, Tirunelveli, Thoothukudi and Virudhunagar districts. Ilmenite and rutile are found in the sands of Kanyakumari beach. Limestone is available in Coimbatore, Cuddalore, Dindigul, Kancheepuram, Karur, Madurai, Nagapattinam, Namakkal, Perambalur, Ramanathapuram, Salem and Tiruvallur districts. Magnesite is obtained in Coimbatore, Dharmapuri, Karur, Namakkal, the Nilgiris, Salem, Tiruchirappalli, Tirunelveli and Vellore districts. Feldspar, quartz, copper and lead are also found in some parts of the state.

**5. Explain the different types of soil in Tamilnadu.**

தமிழ்நாட்டின் பல்வேறு வகையான மண்கள் குறித்து விளக்குக

**Soils of Tamil Nadu**

Soil is the loose material mainly formed by the weathering and erosion of rocks. It forms an important element of agriculture. It provides essential minerals and nutrients for the growth of vegetation. Soil is one of the important non-renewable resources in the world. It takes 300-1,000 years to form two inches of soil. The soil of a place depends on the factors like climate, parent rocks and vegetative cover of the respective places. The soils in Tamil Nadu are broadly classified into five types according to their characteristics. They are alluvial, black, red, laterite and saline soils.

## **Alluvial Soil**

Alluvial soils are formed by the deposition of silt by the rivers. Alluvial soils are generally fertile as they are rich in minerals such as lime, potassium, magnesium, nitrogen and phosphoric acid. It is deficient in nitrogen and humus. It is porous and loamy. Paddy, sugarcane, banana and turmeric are cultivated in this soil. It is found in the river valley regions and the coastal plains of Tamil Nadu. Generally this type of soil is found in the districts of Thanjavur, Tiruvarur, Nagapattinam, Villupuram, Cuddalore, Tirunelveli and Kanyakumari. It is also found to a small extent along the river valleys in few interior districts.

## **Black Soil**

Black soils are formed by the weathering of igneous rocks. It is also known as regur soil. As cotton grows well in this soil, it is also called as black cotton soil. This soil is developed over the Deccan lava granite region under semiarid conditions. It is fine textured and clayey in nature. It is poor in phosphoric acid, nitrogen and organic matter. Chief minerals found in this soil are calcium, magnesium, carbonates, potash and lime. Cotton, sorghum, cumbu and fodder crops are the major crops cultivated in the black soil regions of Tamil Nadu. Black soils are found extensively in the districts of Coimbatore, Madurai, Virudhunagar, Tirunelveli and Thoothukudi.

## **Red Soil**

Red soils cover over two-thirds of the total area of Tamil Nadu. They are found particularly in the central districts of the state. This soil is sandy and loamy in texture. However, the characteristic features of the red soil vary according to its formation and climatic condition under which the soil was formed. Red soil is porous, friable and non-retentive of moisture. The colour of the soil is due to the presence of high content of iron oxides. This soil is poor in nitrogen, phosphorus, acids and humus. paddy, ragi, tobacco and vegetables are the chief crops grown in this soil. Almost all types of crops can be grown in this soil with the application of manure and irrigation facilities. It is dominantly found in Sivagangai and Ramanathapuram districts.

## **Laterite Soil**

This soil is formed by the process of intense leaching. Laterite soils are found in some parts of Kancheepuram, Tiruvallur and Thanjavur districts and some patches over the mountainous region in the Nilgiris. Crops grown in this soil are paddy, ginger, pepper and plantains. It is also suitable for the cultivation of tea and coffee plants.

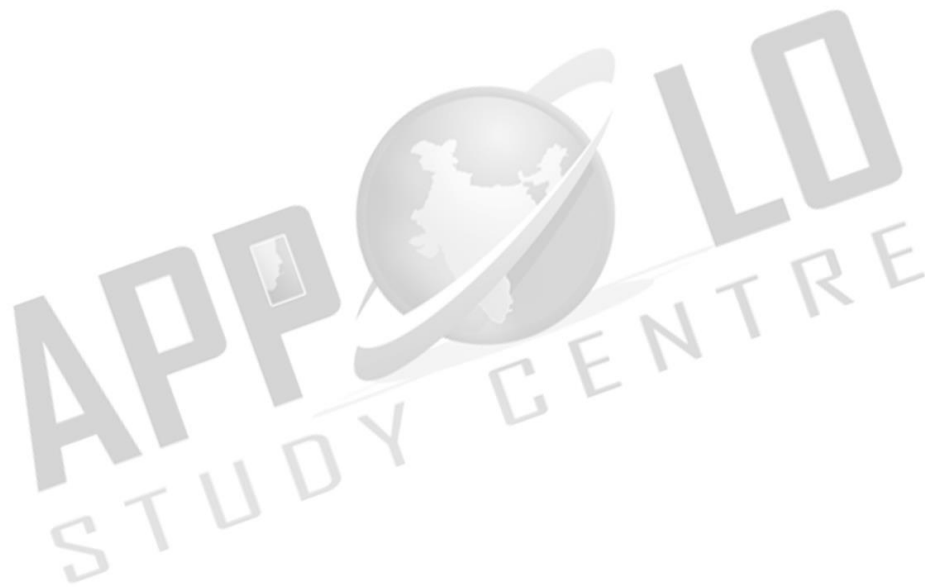
## **Saline Soil**

Saline soils in Tamil Nadu are confined to the Coromandel coast. Vedaranyam has a pocket of saline soil. However, the tsunami waves on December 26, 2004 brought a lot of sand and deposited it all along the east coast of Tamil Nadu. The tsunami made the coastal areas unsuitable for cultivation to a considerable extent.

## Soil Erosion

Soil is a non-renewable resource. It is very difficult to replace the soil once it gets degraded. Deforestation, overgrazing, urbanisation and heavy rain are responsible for soil erosion in Tamil Nadu. Soil erosion reduces the fertility of soils, which in turn reduces agricultural productivity. So, it is necessary to take intensive care to conserve the soil resources.

Desertification is one of the major problems of Tamil Nadu. According to the desertification atlas prepared by the ISRO. About 12% of the total geographical area is under desertification and land degradation. Theni, the Nilgiris and Kanyakumari are the worst affected districts. About 12,000 hectares (120 Sq.km) were affected by sand deposition in Theni and Rajapalayam.



## SECTION B

5 x 10 = 50

### PAPER 3 - UNIT- II: ENVIRONMENTAL SCIENCE

Answer all the questions. Answer not exceeding 150 words each

6. Write briefly about Tamil Nadu State Action Plan on Climate Change.

காலநிலை மாற்றத்திற்கான தமிழ்நாடு மாநில செயல் திட்டம் பற்றி சுருக்கமாக எழுதுக

#### Tamil Nadu State Action Plan on Climate Change (TNSAPCC)

The State has addressed the climate strategies aligned with the eight National Missions under the National Action Plan for Climate Change with strategies covering the period 2015-2020 and focus on issues of climate adaptation and mitigation in the Tamil Nadu State Action Plan on Climate Change (TNSAPCC). The Tamil Nadu State Action Plan on Climate Change (TNSAPCC) was endorsed by Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India (GoI) on 31.03.2015. Since then, the State have been implemented several sectoral projects under adaptation and mitigation. All the concerned line Departments are referring to 11 TNSAPCC as base document for their future plan formulations.

In light of India's Nationally Determined Contributions (NDC) to United Nations Framework Convention on Climate Change (UNFCCC), Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India have advised to revise the Tamil Nadu State Action Plan on Climate Change with technical support from German Corporation for International Cooperation (GIZ) and accordingly action has been taken to revise the TNSAPCC with the objectives to re-examine the State specific impact, risk and vulnerability, to take stock of the implementation of the SAPCC, to re-examine various actions (adaptations and mitigation) in the light of climate goals set in NDC and to prepare new short range(2023) and long range plans up to 2030. Workshops were conducted by the Department of Environment, with the participation of all line departments/ agencies, 12 obtained their comments/suggestions and incorporated in the draft TNSAPCC 2.0.

The draft TNSAPCC 2.0 document emphasizes on Disaster Management and mitigation, Sustainable Development Goals and Composite Vulnerability Index (CVI) for the State. The draft TNSAPCC 2.0 is placed for the views of the decision makers/ policy makers and general public for comments and suggestions during the final High Level Consultation Workshop held on 23.01.2020 and it will be available in the website till 29.02.2020. The final draft TNSAPCC 2.0 will be placed in State Level Steering Committee chaired by the Chief Secretary to Government of Tamil Nadu for onward submission to MoEF&CC, GoI.

7. Bring out the objectives of National Clean Air Programme (NCAP)

தேசிய தூயக் காற்று திட்டத்தின் (NCAP) நோக்கங்களை வெளிக்கொணர்

#### Key Points

#### NCAP:

- It was launched by the MoEF&CC in January 2019.

- It is the first-ever effort in the country to frame a national framework for air quality management with a time-bound reduction target.
- It seeks to cut the concentration of coarse (particulate matter of diameter 10 micrometer or less, or PM10) and fine particles (particulate matter of diameter 2.5 micrometer or less, or PM2.5) by at least 20% in the next five years, with 2017 as the base year for comparison.
- The plan includes 102 non-attainment cities, across 23 states and Union territories, which were identified by the Central Pollution Control Board (CPCB) on the basis of their ambient air quality data between 2011 and 2015.
- Non-attainment cities: These are those that have fallen short of the National Ambient Air Quality Standards (NAAQS) for over five years.

#### 8. Highlight the salient features of National Environment Policy, 2006

தேசிய சுற்றுச்சூழல் கொள்கை, 2006இன் சிறப்பம்சங்களை வெளிக்கொணர்

#### NEP 2006

#### Objectives of the Policy

1. Conservation of Critical Environmental Resources
2. Intra-generational Equity: Livelihood Security for the Poor
3. Inter-generational Equity
4. Integration of Environmental Concerns in Economic and Social Development:
5. Efficiency in Environmental Resource Use
6. Environmental Governance
7. Enhancement of Resources for Environmental Conservation

#### Polluter Pays" principle

Impacts of acts of production and consumption of one party may be visited on third parties who do not have a direct economic nexus with the original act. Such impacts are termed "externalities". The National Environment Policy promotes the internalization of environmental costs, including through the use of incentives based policy instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest, and without distorting international trade and investment.

#### Legal Liabilities in the Policy

The environmental redressal mechanism based on doctrines of criminal liability, have not proved sufficiently effective, and need to be supplemented. The policy adopts the civil liability for environmental damage that would deter environmentally harmful actions, and compensate the victims of environmental damage.

The alternatives to Civil Liability may also apply viz. Fault Based liability and Strict Liability.



- In Fault Based Liability a party is held liable if it breaches a pre-existing legal duty, for example, an environmental standard.

### **Panchayats & Women Participation**

The policy aims at working towards giving the legal recognition of the traditional entitlements of forest dependent communities taking into consideration the provisions of the (PESA). This would remedy a serious historical injustice, secure their livelihoods, reduce possibilities of conflict with the Forest Departments, and provide long-term incentives to these communities to conserve the forests.

### **Wild life**

The policy aims to expand the Protected Area (PA) network of the country, including Conservation and Community Reserves, to give fair representation to all bio-geographic zones of the country. In doing so, develop norms for delineation of PAs in terms of the Objectives and Principles of the National Environment Policy, in particular, participation of local communities, concerned public agencies, and other stakeholders, who have a direct and tangible stake in protection and conservation of wildlife, to harmonize ecological and physical features with needs of socio-economic development.

### **Wetlands**

The Ramsar Convention defines wetlands as, 'areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters', thereby giving a wide scope to the term. Wetlands are under threat from drainage and conversion for agriculture and human settlements, besides pollution. The policy aims at setting up a legally enforceable regulatory mechanism for identified valuable wetlands, to prevent their degradation and enhance their conservation. Develop a national inventory of such wetlands.

Strict liability imposes an obligation to compensate the victim for harm resulting from actions or failure to take action, which may not necessarily constitute a breach of any law or duty of care.

### **The Doctrine of Public Trust**

As per this doctrine, the State is not an absolute owner, but a trustee of all natural resources, which are by nature meant for public use and enjoyment, subject to reasonable conditions, necessary to protect the legitimate interest of a large number of people, or for matters of strategic national interest.

### **Legislative Reforms**

A judicious mix of civil and criminal processes and sanctions will be employed in the legal regime for enforcement, through a review of the existing legislation. The policy calls for identification of the emerging areas for new legislation, due to better scientific understanding, economic and social development, and development of multilateral

environmental regimes, in line with the National Environment Policy. It also calls for review the body of existing legislation in order to develop synergies among relevant statutes and regulations.

### **Environment Impact Assessment**

The policy focuses on encouraging the regulatory authorities, Central and State, to institutionalize regional and cumulative environmental impact assessments (R/CEIAs) to ensure that environmental concerns are identified and addressed at the planning stage itself.

### **CRZ**

The policy aims to revisit the Coastal Regulation Zone (CRZ) notifications to make the approach to coastal environmental regulation more holistic, and thereby ensure protection to coastal ecological systems, coastal waters, and the vulnerability of some coastal areas to extreme natural events and potential sea level rise. In pursuance with the Policy CRZ Notification 2011 was released recently.

### **The Problem of LMOs**

LMO refers to the Living Modified Organisms. Living modified organisms (known as LMOs) result from modern biotechnology is broadly equivalent to genetically modified organisms.

The difference between an LMO and a GMO is that a Living Modified Organism is capable of growing, and typically refers to agricultural crops. Genetically Modified Organisms include both LMOs and organisms which are not capable of growing, i.e. are dead.

## **9. Describe the impact of Climate Change in the Indian Coastal Environment.**

இந்திய கடலோர சுற்றுச்சூழலில் காலநிலை மாற்றத்தின் தாக்கம் குறித்து விவரி

### **Impact of climate change on the coastal environment**

#### **Uneven Climate Change Impacts Along India's Coastline**

India's more than 7,500 square kilometres of coastline are at high risk for impacts of climate change related to sea-level rise. Sea levels along the Indian coast have risen by 8.5 centimetres during the past 50 years, and scientific prediction suggests that 36 million Indians are likely to be living in areas experiencing chronic flooding by 2100. Yet certain coastal regions are more vulnerable than others, evidenced by multiple, repeated displacements in the same places. Communities along the country's east coast are exposed to tropical storms from the Bay of Bengal; in the north and north-eastern parts of India, the Brahmaputra, Ganges, and Yamuna river basins are also vulnerable to flooding due to erosion. A 2017 study on Indian shoreline change occurring between 1989-2001 revealed the highest percentage of erosion occurred in West Bengal, with change along 70 percent of its coast, followed by Kerala (65 percent), Gujarat (60 percent), and Odisha (50 percent).

Beyond displacement and migration along the eastern coast, sea-level rise and flooding might also lead to increased relocation in major coastal cities. The floods of 2018, which displaced about 1.4 million people in the state of Kerala, offer a reminder of the kind of likely consequences for future displacement if the impacts of climate change increase. Similarly, mega cities such as Mumbai, Chennai, and Kolkata are at high risk of flooding and sea-level rise, with millions living in these urban coastal areas likely to be relocated to safer places in the future. In such circumstances, forced migration and displacement would be inevitable in the absence of well-managed, pre-emptive relocation of populations from high-risk areas.

Impact of climate change on the coastal environment is of serious concern to India. Millions of people living in the 7500 Km long coastal zones directly depend on natural resource bases of coastal ecosystems. Indian coasts are highly vulnerable to the sea level rise, due to the extensive low-lying area, high population density, frequent occurrence of cyclonic storms, high rate of coastal environmental degradation and non-sustainable development. Three megacities and number of growing cities with millions of population are at high risk. Climate change is reflected in sea surface temperature and characteristics of tropical storms. Frequency and intensity of cyclonic storms are increasing. Floods associated with heavy rainfall often paralyse life in the coastal cities. Change in the region of formation and path of the cyclones becomes a challenge to the coasts which are now relatively safe. Rising sea level may degrade the rich cultivable land and freshwater resources, causing damage to coastal biodiversity and affecting food security. Damage to the nursery areas for fisheries may affect Indian economy, as India is one of the major exporters of fishery products. Changes in SST, upwelling and coastal circulation has already affected the fish population, affecting the livelihood of millions of poor. Studies indicate that mean sea-level-rise trends along the Indian coasts are about 1.30 mm/yr and it may increase to 3.8 mm/year under the A1B scenario. Coastal zones are already under threat from environmental degradation through ballasting and introduction of invasive species, industrial pollution, groundwater overdraft, sand mining, development activities and river input of polluted sediments. Several social issues such as migration to interior and conflicts over the allocation of land and water can be expected in near future. Finding an adaptation strategy and efficient measures for the protection and sustainable management of coasts are vital in poverty eradication and in maintaining economic development. Implementation of the Coastal Zone Regulation Act for the protection of coastal zones and measures for climate change adaptation and mitigation often fails, because of various administrative, political, economic and social reasons. Coastal zones are becoming more environmentally significant, as life and economy are largely dependent on it and changing climate pose threat to it, making sustainable management a challenging issue. This paper assesses the impact of climate change on the coastal zones of India and analyses various issues related to adaptation and mitigation. A critical review of the existing strategies, policies, coastal zone regulation act and constitutional provisions, and an assessment of the efficiency of the administrative and legal mechanisms in the implementation of policies and regulations have been made. Guidelines for the development of an appropriate environment policy and adaptation strategy and for their effective implementation have been provided.

10. How does the draft EIA notification 2020, differs from EIA notification 2006?

சுற்றுச்சூழல் தாக்க மதிப்பீடு 2020 சுற்றுச்சூழல் தாக்க மதிப்பீடு 2006லிருந்து எவ்வாறு வேறுபடுகிறது?

### Draft EIA Notification, 2020

Under the Environment (Protection) Act of 1986, the first EIA notification was issued in 1994. Later, it was replaced by a modified draft in 2006. Union Minister Prakash Javadekar stated that the reason for the draft notification on EIA 2020 was to consolidate all the 55 amendments and 230 office memorandums issued since 2006. The Secretary of MoEFCC, S.K. Gupta pointed out that while industries are essential to help in the country's development, clearance to establish them should be "expeditious but...with a proper scrutiny." Industrial bodies like the Federation of Indian Mineral Industries (FIMI) have welcomed the new draft. The major proposals of the 2020 EIA draft are appraised below.

### Public Participation

Under the mechanism of EIA, generally four steps are followed: screening, scoping, public participation and appraisal. Public participation has been widely recognised as an essential element of EIA. This is recognised in the 1992 Rio Conference on Environment and Development, which stated that "environment issues are best handled with the participation of all concerned citizens at the relevant level."

By an amendment to the 1994 EIA notification in 1997, India adopted the principle of public hearing for Environmental Clearance (EC). However, the process has been undermined by several factors, including poor quality of information, lack of a mechanism to ensure effective involvement of local communities, and blanket exemption on certain categories of projects for public consultations. As a result, on several cases, the Indian judiciary had to intervene and re-interpret the procedural aspect of public hearing. For instance, between May 2012 and May 2016, 31 judgments on the aspect of public hearing were delivered.

One of the major proposals made in the 2020 draft is reduction of the notice period for public hearings from 30 days to 20 days. Javadekar explained that the shorter window was "in tune with the times", given the growth of internet and mobile telephony.<sup>16</sup> Several environmental activists and organisations have instead argued that even the 30 day timeframe was inadequate as information failed to reach the stakeholders residing in remote and inaccessible terrains.

Furthermore, by classifying a number of projects into A, B1 and B2 (in terms of risk to the environment), a host of projects are exempted from public scrutiny. Projects under Category A and B1 require mandatory EC. Category A projects are appraised by central agencies while Category B1 projects are appraised by state agencies. Category B2 projects, meanwhile, do not require mandatory EC.

The major grievance of a number of environmental experts and activists as well as by state governments like Chhattisgarh, is that by limiting public consultation, the draft is not in consonance with protecting the rights of tribals, among others.

The new draft also proposed that projects having implication for 'national defence and security' or having 'strategic consideration' will be determined by the central government and are exempt from public hearing. Additionally, all 'linear projects' like pipelines and highways in border areas, "falling within 100 kilometers aerial distance from the Line of Actual Control" are exempt from public hearing.

Analysts note that by this provision, the government shall have discretion to designate any project as being of strategic importance. Activists in states with crucial resources like uranium, as in Meghalaya, have also opposed this provision.

Environment ministry officials affirm that sensitive projects "should not be held up for procedural reasons" but rather executed in a timely manner. Indeed, subsequent to the recent military clash between the Indian troops and Chinese PLA in the Ladakh region, improvement in infrastructure development along border areas to avert the growing security challenges has come into greater focus.

### **Post-Clearance Compliance**

Post-clearance compliance implies that once a project gets approved by the concerned authority, the proponent projects are required to adhere to certain rules laid down in the EIA report in order to ensure that no further environmental damages take place. There are several cases where the proponent projects have substantially failed to comply with the rules. The NGT, for instance, imposed fines for non-compliance with environmental conditions on Jindal Power Limited (JPL) and Coal India South Eastern Coalfields (SECL), in March 2020.

The 2016 report by Comptroller and Auditor General of India (CAG) on 'Environmental Clearance and Post Clearance Monitoring' cited several short-comings in following the conditions of the EC. These included non-obtaining of permission from competent authority for cutting trees; no separate head of account and embarking of funds for Environment Management Plan (EMP); irregular use of ground water; change of scope of work after obtaining the EC; non-construction of rain water harvesting structures and residential facilities for workers; irregularities in relief and rehabilitation; violation in handling of hazardous waste materials; and shortfalls in development of green belt.

The new draft EIA, contrary to the 2006 notification – which required submission of the compliance report every six months, proposes annual reports. Environmental experts are of the view that allowing a longer period for filling the compliance report will give an opportunity to project proponents to hide disastrous consequences, which could go unnoticed.

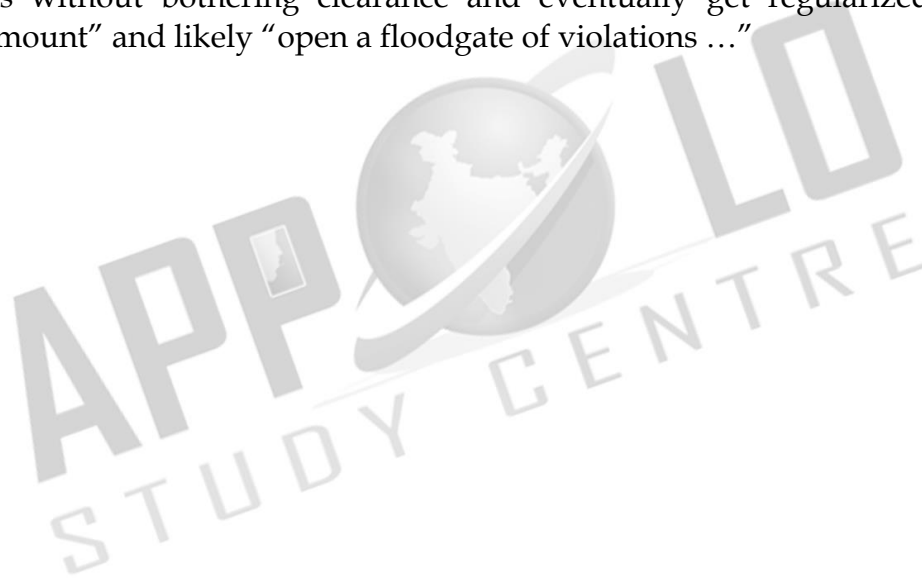
Meanwhile, submission of the compliance report will be solely prepared by the project proponents itself, which, without oversight and review, may lead to inaccurate information submitted on the project. One of the effective tools to strengthen the monitoring and compliance system is allowing the affected communities to participate in monitoring activities.

In July 2020, a bench headed by NGT Chairperson, Justice Adarsh K. Goel, observed that the mechanism for monitoring environmental norms was inadequate and hence, required the MoEFCC to monitor EC clearance conditions “on periodical basis, at least once in a quarter.”

### **Post-facto Clearance**

Another major proposal in the draft 2020 is granting ‘post-facto clearance’ where a project that has been operating without environmental clearance, can be regularised or allowed to apply for clearance. The judiciary has held – as in the case of Alembic Pharmaceutical vs. Rohit Prajapati in April 2020 that “environment law cannot countenance the notion of an ex post facto clearance.”

Firms found violating the terms of their establishment, if they have to get the clearance, however, will have to pay a penalty. Expressing apprehension on this provision, environmental lawyers argue that it is likely to “encourage industries to commence operations without bothering clearance and eventually get regularized by paying the penalty amount” and likely “open a floodgate of violations ...”



SECTION - A

5 x 15 = 75

Answer all the questions. Answer not exceeding 250 words each

PAPER 3 - UNIT I - GEOGRAPHY

11. Climate of India is labelled as tropical monsoon type - justify.

இந்தியாவின் காலநிலை அயன மண்டலப் பருவக்காற்று எனப்படுகிறது - நியாயப்படுத்துக

- 1) climate definition, koeppen classification
- 2) location - tropical country
- 3) yearly definite pattern of wind system
- 4) sw monsoon
- 5) NE monsoon

**Tropical Climate**

Climate is defined as the average weather condition of a place for a larger period of time especially about 35 years.

The word 'monsoon' has been derived from the Arabic word 'Mausim' which means 'season'. Originally, the word 'monsoon' was used by Arab navigators several centuries ago, to describe a system of seasonal reversal of winds along the shores of the Indian Ocean, especially over the Arabian Sea. It blows from the south-west to north-east during summer and from the north-east to south-west during winter.

1. Location - 8°4' N to 37°6'N
2. South west Monsoon - June to September
3. North East or Retreating Monsoon

**Reasons for Tropical Climate**

1. Koeppen classification
  - a. He classified India into 7 climatic zones
  - b. Am - Monsoon with dry summer
  - c. Aw - Tropical savannah
2. Definite wind pattern
  - a. Seasonal reversal of winds every year in a definite pattern
  - b. Madagascar to Peshawar, deflected by Coriolis force
3. Definite wind patterns followed
  1. Seasonal reversal of wind direction takes place
  2. 180° Reversal of Wind direction
  3. Occurs over larger areas

4. South West monsoon

- a. It hits the coast of Kerala on June first week every year
- b. Branches:
  1. Arabian Sea Branch
    - i. Gives heavy rainfall to western side of western ghats
    - ii. No rainfall in Rajasthan – Aravallis remain parallel
  2. Bay of Bengal Branch
    - i. Tamil Nadu does not get rain fall as it is in parallel
    - ii. Heavy rain in North East
    - iii. Funnelling effect – Mawsynram is the wettest spot

Mawsynram – Highest Rainfall  
Kosi – sorrow of Bihar

5. North East Monsoon

- a. It is also called as the retreating monsoon – seasonal reversal
- b. High rainfall in Andhra and Tamil Nadu. TN – 60% annual rain
- c. Nagapattinam receives 100 cm rainfall
- d. North India does not get rain as the air loses its moisture

6. Dominance of Monsoonal rainfall

- a. India gets almost 75% of rainfall from the 2 monsoons
- b. The pattern of rainfall is decided by the onset of monsoon

**Characteristics of Monsoon**

1. Affecting larger part of the continent
2. Reversal of winds of minimum 180°
3. High rainfall in particular area

**12. Highlight the ecological importance of soil to India.**

இந்திய மண்களின் சுற்றுச்சூழல் முக்கியத்துவத்தை வெளிக்கொணர்

- 1) soil definition
- 2) nutrients cycle - O<sub>2</sub> cycle, N<sub>2</sub> cycle, carbon cycle
- 3) hydrological cycle
- 4) decomposers
- 5) role of soil in ecological equilibrium

**Soils**

Soil is the uppermost layer of the land surface, usually composed of minerals, organic matter, living organisms, air and water. Grains in the soil are of three categories namely, clay, silt, and sand. Soils are generally formed by the weathering of rocks under



different conditions. Some soils are formed by the deposition of agents of denudation. Soils can vary greatly from one region to the other.

1. ICAR – 7 types – Alluvial, Black, Red
2. Soil Health Card Scheme

#### ICAR (1953) – Classification of Soil

- |                              |               |               |
|------------------------------|---------------|---------------|
| 1. Alluvial Soil             | 2. Red Soil   | 3. Black Soil |
| 4. Forest and Mountain Soils | 5. Peaty Soil |               |

#### Factors determined soil formation

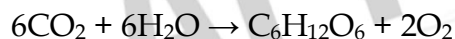
1. Climate
2. Natural vegetation
3. Relief
4. Time

#### Ecological Importance of Soils

1. Nutrient cycling

It plays an important role in the ecological nutrient cycling

- a. O<sub>2</sub> Cycle



The Carbon dioxide is consumed during the process and O<sub>2</sub> is released

- b. Nitrogen cycle

The Nitrogen fixing bacteria like rhizobium, Anabena, Nostoc convert Nitrates to Nitrites

2. Hydrological Cycle

- a. Soil Moisture is absorbed by roots and let out through transpiration
- b. Evapotranspiration – The amount of water vapour released by leaves
- c. It increases humidity of air and it induces rainfall

3. Decomposers

- a. Fragmentation, Leaching, Catabolism, Humification, Mineralisation
- b. The decomposers in soil help in returning of nutrients back to soils

4. Maintaining ecological equilibrium

The soils are useful in the maintenance of the ecological equilibrium as it is medium of plant growth

5. Reduction of surface runoff

The soils absorb the water in the surface thus leading to control of soil erosion

6. Improve ground water

The soil absorb rainwater and it infiltrates and percolates to aquifers improving water table.

7. Medium of plant growth

The soils are the medium of the plant growth. E.g. trees, plants

8. Habitat for good bacteria

The nitrogen fixing bacteria thrive in the soils.

Schemes - Soil Health Card Scheme

13. Discuss the ecological and economical importance of forest.

காடுகளின் சுற்றுச்சூழல் மற்றும் பொருளாதார முக்கியத்துவம் குறித்து விவாதி

**Ecological importance of forest**

- 1) act as carbon sink
- 2) regulating climate
- 3) rainfall
- 4) pollution control
- 5) wildlife habitat
- 6) soil conservation
- 7) reducing global warming

**Economical importance**

- 1) fuel
- 2) industries
- 3) livelihood for tribal people
- 4) minor forest produce
- 5) eco tourism
- 6) fodder

Forests are defined as places where the density of trees are higher and it is a habitat for wildlife.

1. Forest conservation act, 1980
2. Forest policy - 1988, 2019
3. Indian state of forest report - 2019
4. Forest cover - 24.56%

Vana Mahotsav - Afforestation  
Forest Conservation Act - 1980  
National Forest Policy - 1988

### **Micro Climatic Patterns**

The forests are places of biodiversity as it has specified climate

### **Ecological Importance of Forests**

#### **1. Acts as Carbon Sink**

- a. Forests helps to capture excess CO<sub>2</sub> in the atmosphere
- b. Amazon Forests - Lungs of Plant

#### **2. Regulates climatic conditions**

Forests continuously recycles CO<sub>2</sub> to O<sub>2</sub> which is essential for human survival

#### **3. Rainfall**

Huge forests in an area creates rainfall in surrounding areas

#### **4. Pollution control**

Controls pollution problem by absorbing excess pollutants in the atmosphere

#### **5. Soil conservation**

Forests helps to improve the soil. By reducing deforestation, we conserve soil

#### **6. Wildlife Habitat**

Provides habitat for wide variety of wildlife such as Tiger, Lion, Deer, etc

#### **7. Reducing global warming**

By absorbing excess CO<sub>2</sub> in the atmosphere

### **Economical Importance**

#### **1. Fuel**

The produce of forests are used by local communities for fuel

## 2. Industries

- Forest based industries
- Timber – important fuelwood
- Furnitures and other things used by man are made of wood. Teak, Sal

## 3. Livelihood Tribal people

- Provide livelihood for tribal people
- Wide variety of tribals – Lived there

## 4. Minor forest produce

Such as food, fruits, honey wax etc – much in demand

## 5. Eco Tourism

- Emerging type of tourism helping the tribal communities for livelihood
- Generates huge revenue for government through this

## 6. Livelihood for tribals

Tribals depend on the forests for their livelihoods

## 7. Fodder

Many animals get their foods

## 14. Distinguish between renewable and non-renewable resources.

புதுப்பிக்க இயலும் வளங்கள் மற்றும் புதுப்பிக்க இயலா வளங்கள் - வேறுபடுத்துக

SB

Renewable Resources	Non-Renewable Resources
Renewable resources are the resources that can be regenerated after their utilisation	Non-renewable resources are the resources that cannot be replaced again after utilisation
They time taken to renew differs from one resource to another	They are formed over a long geological periods
E.g. Solar Energy, wind energy, Tidal energy, Bio gas, Wave energy etc.	E.g. Coal, Petroleum, Natural gas, etc.

Renewable Resources	Non-renewable Resources
Renewable resources are the resources which can replace itself easily and naturally within a short period of time.	Non-renewable resources are the resources that cannot replace itself in the future in a short period of time.
They are sustainable in nature	They are exhaustible in nature.
They are in an unlimited quantity	They are in a limited quantity
They are environmentally friendly	They are not environment friendly.

They have a lower cost	They have a higher cost
The rate of renewal is greater than the rate of consumption.	The rate of renewal is lower than the rate of consumption.
They do not cause any health issues to the living beings of the Earth.	They cause adverse issues by releasing smoke and cancer causing elements into the atmosphere.
It promotes the balance in nature	It disrupts the balance of nature by digging out coal and crude oil.
It does not release any pollutants in the air	It releases various pollutants which then affect the air and water of the planet.
For example, solar energy, wind energy etc.	For example, minerals and coal.

**15. List out the various water conservation techniques used in India.**

இந்தியாவில் பயன்படுத்தப்படும் பல்வேறு நீர் பாதுகாப்பு நுட்பங்களை பட்டியலிடுங்கள்

- 1) rainwater harvesting
- 2) drip, sprinkler irrigation
- 3) check dams
- 4) recycling
- 5) reusing in industries
- 6) piped water supply with meters
- 7) shower system

Water conservation is defined as the minimizing use of water with definite strategy to store for future purposes.

1. Rain water Harvesting
2. Watershed Management
3. Agriculture - Drip, sprinkler
4. Industrial - Primary, Secondary Tertiary
5. Rajendra Singh - Water man of India
6. Drip irrigation - sprinkler

**Water Conservation Techniques**

**1. Rain Water Harvesting**

- a. It is the old methods of conservation of water in India
- b. Tamil Nadu - ordinance 2003
- c. Rooftop water is directed into the rain water harvesting pits

**2. Watershed Management**

- a. It is a comprehensive technique to conserve water in India
- b. The area that feeds the river is called catchment area watershed management help in conserving water

### 3. Agricultural conservation

#### a. Drip Irrigation

- i. Water is allowed to pour only on the area near the roots of plants
- ii. It is very useful as there is no evaporation loss

#### b. Sprinkler Irrigation

- i. Water is poured using a sprinkler it rotates and waters plants
- ii. Suitable for plants upto 4m

#### c. Rain gun, pivot irrigation are other methods

### 4. Recycling of water

Recycling is the treatment of water through physical, chemical and biological processes.

- a. Primary - physical treatment - filtering, sedimentation
- b. Secondary - chemical treatment using chlorine
- c. Tertiary - using micro-organisms

### 5. Reuse of Water

- a. Water used for one purpose may be used again to conserve water
- b. Cooling water in thermal plants can be used for green houses

### 6. Shower

Usage of shower should be avoided to conserve water.

7. Recycled water should be used for lawn watering
8. Domestic - repairing taps, judicious use

## SECTION - B

5 x 15 = 75

Answer all the questions. Answer not exceeding 250 words each

### PAPER 3 - UNIT II - ENVIRONMENTAL SCIENCE

16. Write an essay on Traditional Knowledge System in India with regard to conservation of Bio-diversity.

பல்லுயிரியலைப் பாதுகாப்பது தொடர்பாக இந்தியாவில் பாரம்பரிய அறிவு முறை பற்றி கட்டுரையை எழுதுங்கள்

“The Convention on Biological Diversity” recognises the importance of traditional knowledge systems in a very high magnitude. Article 8(j) of the convention lays stress on respecting, conserving and promoting the traditional knowledge systems, innovations and practices as preserved by the indigenous communities for the conservation and justifiable use of the biological resources. The interdependence of the indigenous populations and biodiversity is also recognised by the convention.

#### Traditional Knowledge Systems in India with Special Reference to Forest Conservation

Forest conservation and traditional knowledge system have an ancient lineage. Forest conservation with the help of traditional knowledge systems has been used from time immemorial in the Indian sub-continent. This indigenous traditional knowledge system in India is as old as the Indian ancient scriptures. In almost all these ancient texts, references pertaining to various uses of flora and fauna is found. The bio-geographical and cultural history of India has many examples of such utilizations by the indigenous people using the forest resources for various purposes like medicine, food, fodder, dyes, clothing, shelter and various other reasons. Some of these systems are still alive and are being used by the indigenous people.

#### Nature Worship, Sacred Ecology and Conservation of Forest Biodiversity

Human being from time immemorial have been in the awe of nature. The celestial bodies, the terrestrial bodies, animals and plants always have fascinated the human mind with wonder. The river, the mountains, the forests, the ponds and many other terrestrial components of the Earth's ecosystem have enchanted human being with gaze. These natural resources have been giving him food, shelter, medicine, water and were satisfying his spiritual and cultural needs. The scenic beauty of nature is something, which a human being can never create. So worshipping this beautiful, life giving nature became a habit of human beings and then became a tradition which is still followed by the descendants of their forefathers, who started it thousands of years ago

#### Sacred Groves and Conservation of Forest Biodiversity

Patches of natural vegetation, which vary from few trees to several acres of forests and are usually devoted to some God, Deity or tree spirits, are called sacred groves. Due to religious beliefs and rituals, which have been followed from generations to generations, these forests are protected from over exploitation.

## **Various Ethnic Communities and Traditional Knowledge Systems in India**

Vast communities with different cultures reside in India. This phenomenon is observed due to a varied topography, climatic conditions and various other geographic and cultural factors. Since forest cover is distinctive in different terrains and therefore uses of forests resources by the traditional knowledge system are also seen with a variation all over India.

## **Medicinal Use of Biodiversity in India**

Plants have been used for veterinary and other utilities like cosmetics, dying, (vegetable dyes) health, textiles, perfumery on the Indian subcontinent from time immemorial and it has been written in the ancient texts as well. As of today, many tribes in remote areas are using these techniques for their day-to-day requirements.

## **Benefit Sharing under the Biological Diversity Act, 2002**

Section 21 of the biological diversity Act 2002 has legal provisions related to the equitable benefit sharing process managed by the "National Biodiversity Authority" ("NBA"). The act provides for a benefit sharing system which is based on the "Bonn Guidelines" on the access and benefit sharing mechanism varying from case to case. Transfer of technology, joint intellectual property rights, ownership and venturing of capital funds is included in the system as provided by the "Biological Diversity Act , 2002".

**Traditional Knowledge Systems, Biopiracy and Patenting Issues** "Patents on illegally acquired biological source materials are considered acts of biopiracy." The Department of "AYUSH" ("Ministry of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homeopathy") created the "Traditional Knowledge Task Force" for documenting this precious knowledge

## **Curbing Bio-piracy by Traditional Knowledge Digital Library**

Biopiracy is "The practice of commercially exploiting naturally occurring biochemical or genetic material, especially by obtaining patents that restrict its future use, while failing to pay fair compensation to the community from which it originates".

## **Traditional Knowledge Digital Library - A tool for prevention of misappropriations of traditional knowledge**

TKDL contains information from Indian Systems of Medicine, viz., Ayurveda, Unani, Siddha, Sowa Rigpa as well as Yoga available in public domain. For this, traditional knowledge from the existing literature existing in local languages such as Sanskrit, Urdu, Arabic, Persian and Tamil in converted into digitized format, and is available in five international languages including English, German, Spanish, French and Japanese. Traditional Knowledge Resource Classification (TKRC), an innovative structured classification system for the purpose of systematic arrangement, dissemination and retrieval was evolved for about 5,000 subgroups against few subgroups available in International Patent Classification (IPC), related to medicinal plants. The information is structured under section, class, subclass, group and subgroup as per the International Patent Classification (IPC) for the convenience of its use by the international patent



examiners. The TKDL database comprises about 3.6 lakh formulations/ practices that has been transcribed from ISM and Yoga texts.

Each text is read, medicinal formulation/ practice identified and converted into a structured language using Traditional Knowledge Resource Classification by subject (Ayurveda, Unani, Siddha, Sowa Rigpa or Yoga) experts. The codes are then filled into the data entry screen. The content (prior art) from ancient texts are also saved in the database. The translated version of all the TKRC codes is ported in the database. The abstraction is done by the subject experts. The codes once saved in meta data directory are converted in different languages based on Unicode technology. The formulations are converted into English, German, French Japanese and Spanish languages. The converted format of the formulation is readable and can be understood in general by all.

TKDL software with its associated classification system i.e., TKRC converts text in local languages into multiple languages as mentioned above. It may be noted that TKDL is not a transliteration, rather it is a knowledge-based conversion, where data abstracted once is converted into several languages by using Unicode, Metadata methodology. Traditional terminology is also converted into modern terminology, for example, Jwar to fever, Turmeric to Curcuma longa, Mussorika to small pox etc.

TKDL includes a search interface providing full text search and retrieval of traditional knowledge information on IPC and keywords in multiple languages. The search features include single or multiple word searches, complex Boolean expression search, Proximity search, Field search, Phrase search, etc in the form of simple and advance search options. Simple search lets the user search a combination of keywords. Advance search lets the user search using Boolean expressions, using the expressions like "near", "and", "and not". Searches are also available on IPC and TKRC codes.

TKDL acts as a bridge between formulations existing in local languages and a Patent Examiner at a global level, since the database will provide information on modern as well as local names in a language and format understandable to Patent Examiners. It is expected that the issue of the gap on lack of access to prior art traditional knowledge shall get addressed.

**17. Explain the challenges faced by urban local bodies in Solid Waste Management and suggest measures to overcome the challenges.**

திடக்கழிவு மேலாண்மையில் நகர்ப்புற உள்ளாட்சி அமைப்புகள் எதிர்கொள்ளும் சவால்களை விளக்கி, சவால்களை சமாளிப்பதற்கான நடவடிக்கைகளையும் பரிந்துரைக்கவும்.

- Inadequate Planning
- Inadequate in-house capabilities
- Low level of Public Awareness & Community Participation
- Partial Segregation of Waste
- Absence of Treatment & safe Disposal of Solid Waste
- Need for Implementation Strategy
- Need for Integrated Approach
- Inadequate / absence of levy of Service Charges
- Land acquisition
- Lack of uniformity

## Measures

Effective Public Participation

Promote 4R

Polluter Pays Principle

Creation of SWM Fund to ensure sustainability

Public Private Partnership / outsourcing / Citizen Participation to be encouraged for improving service Delivery

Responsibilities of ULBs

ULBs to adopt Integrated

### 18. Mention the significance of wetlands. Discuss the recent developments related to wetland conservation.

சதுப்புநிலங்களின் முக்கியத்துவத்தை குறிப்பிடுக. சதுப்புநில பாதுகாப்பில் சமீபத்திய வளர்ச்சிகள் குறித்து விவாதி

#### Ecosystem and biodiversity support:

- Wetlands are highly productive ecosystems that provide the world with nearly two-thirds of its fish harvest.
- Wetlands play an integral role in the ecology of the watershed. The combination of shallow water, high levels of nutrients is ideal for the development of organisms that form the base of the food web and feed many species of fish, amphibians, shellfish and insects.
- Wetlands' microbes, plants and wildlife are part of global cycles for water, nitrogen and sulphur. Wetlands store carbon within their plant communities and soil (carbon sequestration) instead of releasing it to the atmosphere as carbon dioxide.
- They provide habitat for animals and plants and many contain a wide diversity of life, supporting plants and animals that are found nowhere else.
- They are also an important source of ground water recharge.

#### 2.National Plan for Conservation of Aquatic Ecosystems (NPCA):

- NPCA is a single conservation programme for both wetlands and lakes.
- It is a centrally sponsored scheme, currently being implemented by the Union Ministry of Environment and Forests and Climate Change.
  - It was formulated in 2015 by merging of the National Lake Conservation Plan and the National Wetlands Conservation Programme.
- NPCA seeks to promote better synergy and avoid overlap of administrative functions.

#### Wetlands (Conservation and Management) Rules, 2017:

- Nodal authority: As per the Wetlands Rules, the Wetlands Authority within a state is the nodal authority for all wetland-specific authorities in a state/UT for the enforcement of the rules.
- **Prohibited activities:**
  - Setting up any industry and expansion of existing industries,

- Dumping solid waste or discharge of untreated wastes and effluents from industries and any human settlements, and
- Encroachment or conversion for non-wetlands uses.

### **Ramsar Convention**

- The Convention came into force in 1975 and is one of the oldest inter-governmental accord for preserving the ecological character of wetlands.
- The Convention's mission is "the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world".
- India has 37 Ramsar Sites which are the Wetlands of International importance.
- On the occasion of the World Wetland Day and as a part of its commitment towards conservation, restoration and management of India's wetlands, the Minister of State for Environment, Forest and Climate Change, Sh. Babul Supriyo today announced the establishment of a Centre for Wetland Conservation and Management (CWCM), as a part of the National Centre for Sustainable Coastal Management (NCSCM), Chennai, an institution under the Ministry. The event was attended virtually by NCSCM, State Wetland Authorities and the knowledge partners of the Wetland Division.
- Speaking at the launch the Minister of State for Environment highlighted the importance of wetlands in providing various ecosystem services. "The dedicated Centre which is launched today would address specific research needs and knowledge gaps and will aid in the application of integrated approaches for conservation, management and wise use of the wetlands." said Shri Supriyo.
- India has nearly 4.6% of its land as wetlands, covering an area of 15.26 million hectares and has 42 sites designated as Wetlands of International Importance (Ramsar Sites), with a surface area of 1.08 million hectares. The year 2021 also commemorates the 50th anniversary of the signing of the Ramsar Convention on Wetlands on 2 February 1971 in Ramsar, Iran, celebrated annually as World Wetlands Day.
- The Centre will help in building partnership and networks with relevant national and international agencies. WCM would serve as a knowledge hub and enable exchange between State/ UT Wetland Authorities, wetland users, managers, researchers, policy-makers and practitioners. The Centre would also assist the national and State/ UT Governments in the design and implementation of policy and regulatory frameworks, management planning, monitoring and targeted research for its conservation.
- The Minister also released publications relating to Faunal Diversity of all the Ramsar sites in the country and a brochure on Designation of Ramsar sites.

19. **Critically analyse the Recent natural disasters that occurred in India.**

இந்தியாவில் சமீபத்தில் நிகழ்ந்த இயற்கை பேரிடர்கள் குறித்து ஆய்க

Recently, a **glacial break** in the **Tapovan-Reni area of Chamoli District of Uttarakhand** led to massive **Flash Flood** in **Dhaulti Ganga and Alaknanda Rivers**, damaging houses and the nearby **Rishiganga power project**.

In June 2013, flash floods in Uttarakhand wiped out settlements and took lives.

**Key Points**

**Cause of Flash Flood in Uttarakhand:**

- It occurred in river Rishi Ganga due to the falling of a portion of Nanda Devi glacier in the river which exponentially increased the volume of water.
- Rishiganga meets Dhaulti Ganga near Raini. So Dhaulti Ganga also got flooded.

**Major Power Projects Affected:**

**Rishi Ganga Power Project:**

- It is a privately owned 130MW project.
- Tapovan Vishnugad Hydropower Project on the Dhaultiganga:  
It was a 520 MW run-of-river hydroelectric project being constructed on Dhaultiganga River.
- Several other projects on the Alaknanda and Bhagirathi River basins in northwestern Uttarakhand have also been impacted by the flood.

**Flash Floods:**

**About:**

- These are sudden surges in water levels generally during or following an intense spell of rain.
- These are highly localised events of short duration with a very high peak and usually have less than six hours between the occurrence of the rainfall and peak flood.
- The flood situation worsens in the presence of choked drainage lines or encroachments obstructing the natural flow of water.

**Causes:**

- It may be caused by heavy rain associated with a severe thunderstorm, hurricane, tropical storm, or meltwater from ice or snow flowing over ice sheets or snowfields.

- Flash Floods can also occur due to Dam or Levee Breaks, and/or Mudslides (Debris Flow).
- In areas on or near volcanoes, flash floods have also occurred after eruptions, when glaciers have been melted by the intense heat.
- The intensity of the rainfall, the location and distribution of the rainfall, the land use and topography, vegetation types and growth/density, soil type, and soil water-content all determine just how quickly the Flash Flooding may occur, and influence where it may occur.

**20. Renewable energy for sustainable development - Discuss**

நீடித்த நிலையான வளர்ச்சிக்கு புதுப்பிக்கத்தக்க ஆற்றல் - விவாதி

**Renewable energy sources**

- Solar energy
- Wind energy
- Ocean energy
- Bio energy
- Other energy sources

**Sustainable development definition**

**SDG goal 7 - clean energy**

**Govt of India and TN - renewable energy related policies and treaties**

- Paris climate agreement
- TN solar policy
- TN Electric vehicle policy
- FAME scheme
- National biofuel policy