



Tackling Global Water Scarcity

For Prelims: Jal Kranti Abhiyan, National Water Mission, National Rural Drinking Water Programme, NITI Aayog Composite Water Management Index, Jal Jeevan Mission, Jal Shakti Abhiyan, Atal Bhujal Yojana

For Mains: Global Water Scarcity and related Steps taken, Water Resources, Conservation of Resources

Why in News?

According to a newly published book, **unconventional water sources** can help beat [global water scarcity](#).

- The book was compiled by experts at the United Nations University's Institute for Water, Environment and Health (UNU-INWEH), UNU Institute for Integrated Management of Material Fluxes and of Resources and the UN [Food and Agriculture Organisation](#).
- **Conventional water sources which rely on snowfall, rainfall and rivers** - are not enough to meet growing freshwater demand in water-scarce areas.

What are Unconventional water sources?	
Enhancing Rain via Cloud-Seeding:	<ul style="list-style-type: none">▪ Global research on cloud-seeding technology indicates that precipitation can be in norm, depending on the available cloud resources and technical systems used.▪ However, it was acknowledged that greater research was needed on the variable areas.
Fog Harvesting and Micro-Catchment Rainwater Harvesting:	<ul style="list-style-type: none">▪ Efficient fog harvesting systems wherein moisture in fog is collected through within 20 litres per square metre per day, for a decade. Only 70 sites have shown to be▪ Micro-catchments have also shown potential for households or farmlands in dry e
Role of Icebergs:	<ul style="list-style-type: none">▪ Icebergs, the world's largest source for freshwater, have also been gaining attention▪ Climate change is causing polar ice caps to melt and break, and scientists, scholars▪ In 2017, faced with massive water shortages, the United Arab Emirates proposed country, but no action was taken on this front.
Ballast Water:	<ul style="list-style-type: none">▪ Ballast water is another transportable resource - freshwater or saltwater held in t▪ Around 10 billion tonnes of ballast water is discharged globally every year in accorda▪ When desalination is used to treat ballast water, the end product (desalinated w▪ organisms and unhealthy chemical compounds, making it usable for public water sup
Municipal Wastewater:	<ul style="list-style-type: none">▪ Proper treatment of municipal wastewater — already underway in several countries is▪ Several countries have launched successful initiatives to treat wastewater to r
Drainage Water:	<ul style="list-style-type: none">▪ Drainage water used in irrigation agriculture also has potential for reuse, but is hinde▪ Careful management and promotion of salt-resistant crops can be the solutions for th
Brackish Water:	<ul style="list-style-type: none">▪ Research has shown that continental shelves have around 5 million cubic km b▪ cubic km freshwater within their sedimentary deposits.

- Development of brackish water resources is already underway in countries in West Asia and India.

What is the Current State of Water Scarcity?

▪ World:

- **Only 3% of the world's water is freshwater**, and two-thirds of that is tucked away in frozen glaciers or otherwise unavailable for our use.
- As many as **87 countries are projected to become water-scarce by 2050**.
- One in four people on Earth face shortages of water for drinking, sanitation, agriculture and economic development.
 - Water scarcity is expected to intensify in regions like the Middle East and North Africa region, which has 6% of the global population but only 1% of the world's freshwater resources.

▪ India:

◦ About:

- Although India has **16% of the world's population**, the country possesses only 4% of the world's freshwater resources.
- In recent times, the **water crisis in India has become very critical**, affecting millions of people across India.
- As many as **256 of 700 districts in India have reported 'critical' or 'overexploited' groundwater levels according to the most recent [Central Ground Water Board](#) data (from 2017)**.
- **Three-fourths of India's rural families lack access to piped, drinkable water** and must rely on unsafe sources.
- India has **become the world's largest extractor of groundwater**, accounting for 25% of the total. Some **70% of our water sources** are contaminated and our major rivers are dying because of pollution.

◦ Related Initiatives:

- [Jal Kranti Abhiyan](#)
- [National Water Mission](#)
- [National Rural Drinking Water Programme](#)
- [NITI Aayog Composite Water Management Index](#)
- [Jal Jeevan Mission](#)
- [Jal Shakti Abhiyan](#)
- [Atal Bhujal Yojana](#)

What are the Recommendations?

- Unconventional water resources can provide major relief, provided the following strategies are followed:
 - **Promoting further research and practice** on both technical and nontechnical aspects of unconventional water resources.
 - **Ensuring that unconventional waters provide benefits**, not cost to the environment.
 - Positioning unconventional waters as a reliable source of water in times of uncertainty.
 - Supporting complementary and multidimensional approaches such as addressing water scarcity and climate change together.

UPSC Civil Services Examination, Previous Year Question

Q. If National Water Mission is properly and completely implemented, how will it impact the country? (2012)

1. Part of the water needs of urban areas will be met through recycling of waste-water.
2. The water requirements of coastal cities with inadequate alternative sources of water will be met by adopting appropriate technologies that allow for the use of ocean water.
3. All the rivers of Himalayan origin will be linked to the rivers of peninsular India.
4. The expenses incurred by farmers for digging bore-wells and for installing motors and pumpsets to

draw ground-water will be completely reimbursed by the Government.

Select the correct answer using the codes given below:

- (a) 1 only
- (b) 1 and 2 only
- (c) 3 and 4 only
- (d) 1, 2, 3 and 4

Ans: (b)

Exp:

- The National Water Mission is one of the eight missions in the National Action Plan on Climate Change to tackle the threats of global warming. The objective of National Water Mission is “conservation of water, minimizing wastage and ensuring its equitable distribution both across and within States through integrated water resources development and management”.
- The mission has provisions for the capacity building in areas like:
 - Adaptation and Management planning for judicious utilization of water resources.
 - Exploring new sources. Hence, 2 is correct.
 - Using Reverse Osmosis for sea water and brackish water desalinization.
 - Recycle of water and reuse wherever possible. Hence, 1 is correct.
 - Technologies for water purification.
 - Mandating water harvesting.
- However, it does not have provisions related to the interlinking of rivers or for the reimbursement of expenditure related to digging bore wells and buying pumps. Hence, 3 and 4 are not correct. Therefore, option (b) is the correct answer.

Source: DTE

SC Judgement on Eco Sensitive Zone

For Prelims: Eco Sensitive Zones, Environmental (Protection) Act, 1986, National Wildlife Action Plan, National Park, Wildlife Sanctuary, Protected Forests

For Mains: Biodiversity and its Conservation, Eco Sensitive Zones, Environmental (Protection) Act, 1986, National Wildlife Action Plan

Why in News?

Recently, the [Supreme Court](#) directed that every protected forest, national park and wildlife sanctuary across the country should have **a mandatory eco-sensitive zone (ESZ) of a minimum one km** starting from their demarcated boundaries.

- The judgment came on a petition instituted for the protection of forest lands in the Nilgiris district of Tamil Nadu.

What are the Key Highlights of Judgement?

- The **Centre had** while coming out with **February 2011 guidelines on ESZ** had prescribed a **10-kilometre boundary** based on responses received from states and UTs.
 - The Court was conscious of the fact that **a uniform ESZ for all national parks and sanctuaries would not be feasible** as it noted special cases such as Sanjay Gandhi National Park in Mumbai and Guindy National Park in Chennai which are situated very close to the metropolis.
- If the existing ESZ goes **beyond the 1 km buffer zone** or if any statutory instrument prescribes a higher limit, then **such extended boundary shall prevail.**
- **Mining** within the national parks and wildlife sanctuaries **shall not be permitted.**
- The judgement would **apply in all such states/UTs** where the minimum ESZ is not prescribed.
- The **minimum width of ESZ may be diluted in the overwhelming public interest.**
 - The state or UT concerned shall approach the Court-appointed **Central Empowered Committee (CEC) and MoEFCC** (Ministry of Environment Forest and Climate Change) and both these bodies shall give the respective opinions or recommendations before this Court based on which this Court shall pass appropriate order.
- The Court directed the **Principal Chief Conservator of Forests (PCCF)** of each state and UT to submit **a report in three months** to the Court providing a list of activities continuing in the ESZ of every national park or wildlife sanctuary.
- The Court entrusted the PCCF to ensure that **no new permanent structure comes up within ESZ** and those already carrying out any activity will have to apply for permission afresh from the PCCF within six months.

What are Eco Sensitive Zones?

- **About:**
 - The [National Wildlife Action Plan \(2002-2016\)](#) of the [Ministry of Environment, Forest and Climate Change \(MoEFCC\)](#) stipulated that state governments should declare land falling within **10 km of the boundaries of national parks and wildlife sanctuaries** as eco fragile zones or **Eco Sensitive Zones (ESZs)** under the [Environmental \(Protection\) Act, 1986](#).
- **Purpose:**
 - The purpose of declaring ESZs around national parks, forests and sanctuaries is to create some kind of a **“shock absorber”** for the protected areas.
 - These zones would act as **a transition zone** from **areas of high protection** to those involving **lesser protection.**
- **Prohibited activities:**
 - Commercial mining, saw mills, industries causing pollution, establishment of major hydroelectric projects (HEP), commercial use of wood.
 - Tourism activities like hot-air balloons over the National Park, discharge of effluents or any solid waste or production of hazardous substances.
- **Regulated activities:**
 - Felling of trees, establishment of hotels and resorts, commercial use of natural water, erection of electrical cables, drastic change of agriculture system, e.g. adoption of heavy technology, pesticides etc, widening of roads.
- **Permitted activities:**
 - Ongoing agricultural or horticultural practices, rainwater harvesting, organic farming, use of renewable energy sources, adoption of green technology for all activities.
- **Significance:**
 - **Minimize the impact of development activities**
 - To minimize the impact of urbanization and other developmental activities, the areas adjacent to protected areas have been declared as Eco-Sensitive Zones.
 - **In-situ conservation:**
 - ESZs help in in-situ conservation, which deals with conservation of an endangered species in its natural habitat, for example the conservation of the One-horned Rhino of Kaziranga National Park, Assam.
 - **Minimize Forest Depletion and Man-Animal Conflict**
 - Eco-Sensitive Zones minimize forest depletion and man-animal conflict.
 - The protected areas are based on the core and buffer model of management,

through which local area communities are also protected and benefitted.

What are the challenges to Eco-Sensitive Zones?

- **Developmental activities:**
 - Activities such as construction of dams, roads, urban and rural infrastructures in the ESZ, create interference, negatively impact upon the environment and imbalance the ecological system.
- **Governance and new laws:**
 - The Environmental Protection Act 1986 and the Wildlife Protection Act 1972 ignore forest communities' rights and fail to stop poaching of animals. This is in order to support development activities in ESZs.
- **Tourism:**
 - To cater to the increasing demand for eco-tourism, land around parks and sanctuaries is being cleared through deforestation, displacement of local people etc.
- **Introduction of exotic species:**
 - Exotic species like Eucalyptus and Acacia auricularis etc., and their plantations create a competing demand on naturally occurring forests.
- **Climate change:**
 - Climate change has generated land, water and ecological stress on the ESZs. For example, frequent forest fires or the Assam floods which badly affected the [Kaziranga National Park](#) and its wildlife.
- **Local communities:**
 - Shifting cultivation, pressure of increasing population and the rising demand for firewood and forest produce, etc. exert pressure on the protected areas.

Way Forward

- The States should act as a trustee for the benefit of the general public in relation to natural resources so that sustainable development can be achieved in the long term.
- The government should not confine its role to that of a facilitator of economic activities for the immediate upliftment of the fortunes of the State.
- Afforestation and reforestation of degraded forest, regeneration of lost habitats, promoting carbon footprints can be done.
- Propagating Conservation techniques and creating awareness about overexploitation of resources and its adverse impacts among masses.

UPSC Civil Services Examination, Previous Year Question

Q. In which one among the following categories of protected areas in India are local people not allowed to collect and use the biomass? (2012)

- (a) Biosphere Reserves
- (b) National Parks
- (c) Wetlands declared under Ramsar Convention
- (d) Wildlife Sanctuaries

Ans: (b)

Exp:

- **National Park:** It is an area, whether within a sanctuary or not and can be notified by the state government to be constituted as a National Park, by reason of its ecological, faunal, floral, geomorphological, or zoological association or importance, needed for the purpose of protecting and propagating or developing wildlife therein or its environment. **No human activity is permitted** inside the national park except for the ones permitted by the chief wildlife warden of the state under the conditions given in Chapter IV, Wildlife Protection Act, 1972.

- **Biosphere Reserves:** These are large areas of biodiversity where flora and fauna are protected. These regions of environmental protection roughly correspond to IUCN Category V Protected areas. Biosphere Reserves of India often include one or more National Parks or sanctuaries, along with buffer zones that are **open to some economic uses**. Protection is granted not only to the flora and fauna of the protected region, but also to the human communities who inhabit these regions, and their ways of life.
- **Wildlife Sanctuary:** It is defined by the State Government via notification. There is no need to pass a legislation by the state assembly to declare a wildlife sanctuary. Fixation and alternation of boundary can be done by the state legislature via resolution. No alteration of boundaries in wildlife sanctuaries can be done without approval of the NBWL (National Board of Wildlife). **Limited human activities are permitted** in the sanctuary.
- **Wetlands under the Ramsar convention do not bar locals from collecting biomass** from the wetlands rather they make local people a stakeholder in **the conservation of the wetland**. Therefore, option (b) is the correct answer.

[Source: TH](#)

Community Forest Resource

For Prelims: Community Forest Resource, Reserve Forest, Protected Forest, Sanctuary and National Parks

For Mains: Forest Rights Act and related issue, Community Forest Resource Rights and significance of the Recognition, Issues Related to SCs & STs, Management of Social Sector/Services

Why in News?

Chhattisgarh has become only the second state in the country to **recognise Community Forest Resource (CFR) rights** of a village inside a **Kanger Ghati National Park**.

- While CFR rights are an important empowerment tool, getting a consensus amongst various villages about their traditional boundaries often proves a challenge.
- In 2016, the **Odisha government was the first to recognise Community Forest Resources (CFRs)** inside the [Simplipal National Park](#).

What are the Highlights about the Kanger Ghati National Park?

- Kanger Valley National Park is located in the Bastar district (Near Jagdalpur) of the state of Chhattisgarh.
- The Kanger Valley National park is also known as **Kanger Ghati National Park**.
- It was declared as a **National park in the year of 1982**. Total area of the park is about 200 Km².
- The national Park is situated on the valley of river Kanger. The park derives its name from the Kanger River, which flows throughout its length.
- The Park is a typical mixed **humid deciduous type of forest**, in which the Sal, Saugaun, teak and bamboo trees are available in abundance.
- The **most popular species in this area is Bastar Maina** which enchant everyone with their human voice.

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National Parks & Sanctuaries of Chhattisgarh



What is Community Forest Resource (CFR)?

▪ About:

- It is the **common forest land** that has been traditionally protected and conserved for sustainable use by a particular community.
- The community **uses it to access resources available within the traditional and customary boundary** of the village; and for seasonal use of landscape in case of pastoralist communities.
- Each CFR area has a **customary boundary with identifiable landmarks** recognised by the community and its neighboring villages.

▪ Categories:

- It may **include forest of any category** – revenue forest, classified & unclassified forest, deemed forest, District Level Committee (DLC) land, reserve forest, [protected forest](#), **sanctuary and national parks etc.**

What are Community Forest Resource Rights?

- Under Section 3(1)(i) of the [Scheduled Tribes and Other Traditional Forest Dwellers \(Recognition of Forest Rights\) Act \(commonly referred to as the Forest Rights Act or the FRA\)](#), 2006 the Community Forest Resource rights **provide for recognition of the right to “protect, regenerate or conserve or manage”** the community forest resource.
- These **rights allow the community to formulate rules for forest use** by itself and others and thereby discharge its responsibilities under Section 5 of the FRA.
- CFR rights, along with Community Rights (CRs) under Sections 3(1)(b) and 3(1)(c), which **include nistar rights** (used erstwhile in princely states or zamindari, etc.) **and rights over non-timber**

forest products, ensure sustainable livelihoods of the community.

- These rights give the **authority to the [Gram Sabha](#) to adopt local traditional practices** of forest conservation and management within the community forest resource boundary.

What are the Benefits of CFR Rights Recognition?

- **Giving Justice to Forest Communities:**
 - Aimed at **undoing the “historic injustice” meted out to forest-dependent communities** due to curtailment of their customary rights over forests.
 - It is important as it **recognises the community’s right to use, manage and conserve forest resources**, and to legally hold forest land that these communities have used for cultivation and residence.
- **Underlines Role of Forest Dwellers:**
 - It also **underlines the integral role that forest dwellers play in sustainability of forests** and in conservation of biodiversity.
 - It is of **greater significance inside protected forests like national parks, sanctuaries and [tiger reserves](#)** as traditional dwellers then become a part of management of the protected forests using their traditional wisdom.

What is the Forest Rights Act?

- **FRA enacted in 2006 recognises the rights of forest-dwelling tribal communities** and other traditional forest dwellers to forest resources on which these communities were dependent for a variety of needs, including livelihood, habitation and other sociocultural needs.
- It recognizes and vest the forest rights and occupation in **Forest land in Forest Dwelling Scheduled Tribes (FDST) and Other Traditional Forest Dwellers (OTFD)** who have been residing in such forests for generations.
- It **strengthens the conservation regime of the forests** while ensuring livelihood and food security of the FDST and OTFD.
- The [Gram Sabha](#) is the authority to initiate the process for determining the nature and extent of **Individual Forest Rights (IFR) or Community Forest Rights (CFR)** or both that may be given to FDST and OTFD.

UPSC Civil Services Examination, Previous Year Question

Q. Consider the following statements: (2018)

1. The definition of “Critical Wildlife Habitat” is incorporated in the Forest Rights Act, 2006.
2. For the first time in India, Baigas have been given Habitat Rights.
3. Union Ministry of Environment, Forest and Climate Change officially decides and declares Habitat Rights for Primitive and Vulnerable Tribal Groups in any part of India.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 3 only
- (d) 1, 2 and 3

Ans: (a)

Exp:

- **“Critical Wildlife Habitat” has been defined in the Forest Rights Act, 2006** as such areas

of National Parks and Sanctuaries that are required to be kept as inviolate for the purpose of wildlife conservation as may be determined and notified by the Central Government. Hence, statement 1 is correct.

- The Baiga community (largely in Madhya Pradesh) is one of the 75 Particularly Vulnerable Tribal Groups (PVTGs) in India, who are eligible to get Habitat Rights under the Forest Rights Act, 2006. Over the years, increasing state control over forests and diversion of forest land for development and conservation has seriously threatened these forest communities. The Government of Madhya Pradesh in **2015 recognised the habitat rights of Baigas** and the tribe became the first community in India to get the habitat rights. Hence, statement 2 is correct.
- The **Habitat Rights of the PVTGs are recognized by the District Level Committee in the States**. The Ministry of Tribal Affairs clarifies the scope and extent of the definition of habitat rights in the context of PVTGs. Hence, statement 3 is not correct. Therefore, option (a) is the correct answer.

[Source: IE](#)

SHRESHTA Scheme

For Prelims: National Education Policy, SHRESHTA Scheme

For Mains: Education, Issues related to SC/ST, Contribution of the various educational schemes of the government of India in upliftment of the social and economic status of the people belonging to scheduled class

Why in News?

Recently, the [Ministry of Social Justice and Empowerment](#) has launched the scheme 'SHRESHTA.' This scheme is known as **Scheme for residential education for students in High school in Targeted Areas.**

- The scheme 'SHRESHTA' was created with the goal of providing **quality education** and **opportunity** to students of **SC Category**.

What is the scheme 'SHRESHTA'?

- **About:**
 - Its basic motive is **to uplift the socio-economic status of the Scheduled Castes peoples** by providing **high quality education** to their children in **best private residential schools** in the country.
 - Admission will be provided in **Class 9 and Class 11** of **CBSE affiliated private schools**.
- **Objective:**
 - To make **easy delivery** of the **Governmental initiatives and schemes**.
 - To create a **conducive atmosphere** for the 'Scheduled Castes' socioeconomic advancement and overall growth.
 - Collaborating with volunteer groups **to bridge the gap in service-deprived Scheduled Castes (SCs) dominating regions in the education sector**.
 - To enable **bright Scheduled Caste (SC) students** with **high-quality education** so that they can pursue future opportunities.

- **Eligibility:**
 - The students, belonging to [Scheduled Castes](#), studying in class **8th and 10th** in the current academic year (2021-22) are eligible for availing the benefits of the scheme.
 - Students from the SC community who come from a **marginalized income group** with an **annual income** of up to **Rs.2.5 lakh** are eligible.
 - The selection will be done through a transparent mechanism which is known as **National Entrance Test for SHRESHTA (NETS)**.
 - It will be conducted by the [National Testing Agency \(NTA\)](#) for admission in **class 9th and 11th**.
- **Beneficiaries:**
 - Government has targeted that every year around **3000 students** belonging to **SC category** will be admitted to **Class 9 and Class 11** under this system.
 - The Ministry will **cover the whole cost of their school fees and accommodation fees** till they have completed their academics in **class 12th**.

What are the Other Related Initiatives for SCs?

- **Babu Jagjivan Ram Chhatrawas Yojana (BJRCY):**
 - The **Department of Social Justice and Empowerment** is a nodal agency for implementation of this scheme.
 - Central assistance is provided to the implementing agencies, namely State Governments/UT Administrations/Central and State Universities/Non-Governmental Organizations/Deemed Universities in the private sector, under the Centrally Sponsored Scheme, namely Babu Jagjivan Ram Chhatrawas Yojna (BJRCY), for the construction of new hostels/expansion of existing hostel facilities for Scheduled Castes students.
- [Post Matric scholarship schemes for SC:](#)
 - It is a **Centrally Sponsored Scheme** launched in **2006**. It is implemented through State government and Union Territory administration.
 - Government is committed to give a big push to its effort so that the Gross Enrolment Ratio (GER) in higher education of SCs would reach up to the national standards within the 5 year period.
- **Single National Scholarship Scheme:**
 - The **Ministry of Social Justice and Empowerment** has been tasked to implement the Scheme by conducting a merit test.
 - **Beneficiary:** Students in the **Schedule Caste, Other Backward Class (OBC), Denotified, Nomadic and semi-Nomadic Tribe (DNT) and Economically Backward Caste (EBC)** categories will be able to avail the national scholarship.

[Source: PIB](#)

India and Senegal

For Prelims: Non-Aligned Movement, Ezulwini Consensus, Sirte Declaration, Comprehensive Convention on International Terrorism

For Mains: India Senegal recent Developments, Bilateral Relations and Significance

Why in News?

Recently, the **Indian Vice President visited Senegal** and three **MoUs** (Memorandums of

Understanding) **for cultural exchange, cooperation in youth matters and visa free regime** were signed.

- Both countries are celebrating **60 years of their diplomatic relations**.



What are the Highlights of the Recent Visit?

- **Visa-Free Regime:**
 - The first MoU pertains to visa-free regime for diplomatic and official passport holders which would strengthen cooperation between the two countries through seamless travel of officials/diplomats.
- **Cultural Exchange Programme:**
 - MoU for Cultural Exchange Programme (CEP) for the period 2022-26 was renewed.
 - With the renewal of the CEP, **there will be more cultural exchanges, thereby strengthening people-to-people contacts.**
- **Bilateral Cooperation in Youth Matters:**
 - Recognizing that both India and Senegal have a relatively young population, this MoU will be **mutually beneficial to both the countries through sharing of information, knowledge and good practices**, and youth exchanges.
- **Diversification of Trade Basket:**
 - Indo-Senegalese trade saw a 37% increase to USD 1.5 billion during last one year despite Covid-19 pandemic. India called for diversifying trade basket, particularly in the sectors of Agriculture, Oil & Gas, Health, Railways, Mining, Defence, green energy etc.
 - In view of the **large number of phosphates imported by India from Senegal**, Indian companies, especially those producing heavy earth moving equipment, can offer their expertise in this area.
- **Upgradation of Entrepreneurial Training & Development Centre:**
 - Phase II of the upgradation of Entrepreneurial Training & Development Centre (CEDT) at Dakar was approved.
 - The CEDT was set up in Dakar in 2002 under Indian grant assistance and every year around 1000 youth, though mainly from Senegal, but many also from 19 other African countries, **get trained in six different disciplines at the Centre.**
- **ITEC Course:**
 - Noting that Senegal, being a French speaking country, is **not able to avail various training/capacity building programmes under ITEC (Indian Technical and Economic Cooperation)** which are in English language, India offered a Special ITEC Course on the English training for Senegalese public servants for 20 persons at a time.
- **E-Vidya Bharati and E-Aarogya Bharati initiative:**
 - Recognizing that many African students come to India for higher studies, India called for enhanced cooperation with Senegal in implementing the E-Vidya Bharati and E-Aarogya Bharati (E-VBAB) initiative (tele-education and tele-medicine) for the larger benefit of Senegalese students.
- **Issue of Indian Nationals Detained:**

- India took up the issue of **four Indian nationals, crew members of ship M.V. Asso-6, who have been detained in Senegal since June 2021** on alleged drug trafficking charges and **requested the Senegalese government to expedite their trial** so that if released, they could return to their anxious families.
- **India's permanent UNSC membership:**
 - Appreciating Senegal's support for India's permanent UNSC membership, India reiterated **India's unwavering support to the Common African Position, enshrined in the [Ezulwini Consensus](#) and the [Sirte Declaration](#)** and underscored the need to rectify the historical injustice done to the African continent.
 - The Ezulwini Consensus (2005) is a position on international relations and reform of the United Nations, agreed by the African Union.
- **Non-Aligned Movement:**
 - India called for **re-energizing and re-invigorating [Non-Aligned Movement \(NAM\)](#)** and making it more responsive to contemporary issues of relevance to the developing world.
 - India sought **Senegalese support for early adoption of the [Comprehensive Convention on International Terrorism \(CCIT\)](#)** under the UN umbrella, terming it vital to combat the menace of **[cross-border terrorism](#)**.
- **Presidency of African Union:**
 - India congratulated Senegal on its assumption of the Presidency of African Union.

What are the Key Points of India-Senegal Relations?

- **Political Relations:**
 - Diplomatic relations between the two countries **were established at Ambassadorial level in 1962**, with a resident Indian Mission in Dakar.
 - Both countries enjoy warm and friendly bilateral relations **sharing common values of democracy, development and secularism**.
 - They are **both members of the [Non-Aligned Movement](#) and G-15** and that of **[International Solar Alliance](#)**.
 - G-15 was essentially conceived as an economic forum designed to foster South-South cooperation.
- **Commercial Relations:**
 - Major items of export from India include textiles, food items, automobiles and pharmaceuticals. Major items of import from Senegal are phosphoric acid and raw cashew.
- **Development Assistance Programmes:**
 - India has extended Lines of Credit to Senegal in such sectors as agriculture and irrigation, transport, rural electrification, fisheries, women poverty alleviation, IT training and equipment, medical, railways etc.
 - India supplied **250 e-Rickshaws with lithium-ion batteries to Senegal**.
- **Cultural Cooperation:**
 - Some of the Indian cultural events organized in 2019 Senegal included TIRANGA 3.0 - the 3rd edition of Festival of India in Senegal, Dakar, Tiranga Holi, **[4th International Day of Yoga](#)**, and, and various events related to 150th Mahatma Gandhi Birth Anniversary celebrations.
 - India also offers **10 ICCR (Indian Council for Cultural Relations) Scholarships**.
- **Indian Diaspora:**
 - The Indian community numbers around 500 (five hundred). Most of them are working for Indian companies including those executing development projects under Lines of Credit extended by India. Some of them are running their own businesses.

[Source: PIB](#)

India's First Liquid Mirror Telescope

Why in News?

Recently, **Devasthal Observatory campus** owned by **Aryabhata Research Institute of Observational Sciences (ARIES)**, Nainital in Uttarakhand has set-up the **International Liquid-Mirror Telescope (ILMT)**.

What are the Key Highlights about ILMT?

- It has become the **world's first Liquid-Mirror Telescope (LMT) to be commissioned for astronomy** and also one of its kind to be operational anywhere in the world.
- **Asteroids, supernovae, space debris and all other celestial objects** will be observed using ILMT from an altitude of **2,450 metres in the Himalayas**.
- Previously built telescopes either tracked **satellites** or were deployed for military purposes.
- ILMT will be the **third telescope facility to come up at Devasthal**.
 - Devasthal is **one of the world's original sites** for obtaining astronomical observations.
 - **Devasthal Optical Telescope (DOT)** and **Devasthal Fast Optical Telescope (DFOT)** are the other two telescope facilities at Devasthal.
- In **October 2022, full-scale scientific operations** of ILMT will be started.
- It will be working along with **India's largest operating Devasthal Optical Telescope (DOT)**.
- The countries involved in ILMT's development are **India, Belgium, Canada, Poland and Uzbekistan**.

How is LMT Different from Conventional Telescope?

- A LMT is a **stationary** telescope whereas a conventional telescope **moves along the direction of the object** of interest in the sky.
- A LMT will survey and capture **any and all possible celestial objects** such as stars, galaxies, supernovae explosions, asteroids and even space debris. However, a conventional captures **just a piece of sky at a given point of time**.
- LMT comprises mirrors with a **reflective liquid (ILMT has mercury as reflective liquid)**. On the other hand, a conventional telescope uses **highly-polished glass mirrors**.
- While ILMT will be capturing **images of the sky on all nights**, conventional telescopes observe specific objects in the sky for fixed hours only.

What is the Significance of ILMT?

- **Enormous amount of data** (10-15 GB/night) will be generated. This will be significant for the global scientific communities.
- Latest computational tools, like **Artificial Intelligence, Machine Learning and big data analytics** will be deployed for screening, processing and analyzing the data.
- Selected data can be used as a base data for carrying out **further focused research using spectrographs, near-Infrared spectrograph mounted on the in-house DOT**.

UPSC Civil Services Examination, Previous Year Question

Q. In the context of modern scientific research, consider the following statements about 'IceCube', a particle detector located at South Pole, which was recently in the news: (2015)

1. It is the world's largest neutrino detector, encompassing a cubic kilometre of ice.
2. It is a powerful telescope to search for dark matter.
3. It is buried deep in the ice.

Which of the statements given above is/are correct?

(a) 1 only

- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Ans: (d)

Exp:

- IceCube Neutrino Observatory is buried deep inside Antarctic ice and is spread over a cubic kilometre. **Hence, statements 1 and 3 are correct.**
- Weakly Interacting Massive Particle (WIMP) dark matter could be gravitationally captured by massive objects like the Sun and accumulate in the core of the Sun.
- With such high density of these particles, they annihilate each other at a significant rate. The products of this annihilation decay into neutrinos, which could be observed by IceCube as an excess of neutrinos from the direction of the Sun.
- IceCube was built specifically to identify and track high-energy neutrinos. **Hence, statement 2 is correct.**
- The National Science Foundation (a US agency that supports fundamental research) provided the primary funding for the IceCube Neutrino Observatory, with assistance from partner funding agencies around the world.
- **Therefore, option (d) is the correct answer.**

[Source: IE](#)

Operation Mahila Suraksha

Why in News?

Under the Operation Mahila Suraksha, **Railway Protection Force (RPF)** has arrested more than 7000 persons who were traveling unauthorizedly in the coaches reserved for women.

- RPF also rescued girls/women from becoming the victims of [human trafficking \(Operation AAHT\)](#).

What is Operation Mahila Suraksha?

- **About:**
 - The pan-India drive "Operation Mahila Suraksha" was launched from 3rd to 31st May 2022 to ensure women's security.
- **Other Such Operation:**
 - With an objective of providing enhanced safety and security to lady passengers travelling by trains for their entire journey a pan India initiative "**Meri Saheli**" is also operational.
 - Indian Railways has launched "**Meri Saheli**" initiative for focused action on **security of women** across all zones with an objective to provide safety and security to lady passengers travelling by trains for their entire journey from starting station to destination station.

What is the Railway Protection Force (RPF)?

- The contingent of RPF is an **Armed Force of the Union of India**. It is a security force under the

ownership of Indian Railways, Ministry of Railways.

- The history of the RPF **dates back to 1882** when various railway companies appointed their own guards for protection of railway property.
- The **force was declared as statutory force in the year 1957** by an enactment of Parliament subsequently declared as an Armed Force of the Union of India in the year 1985.
- The **RPF Rules were enacted in 1959** and RPF Regulations published in 1966. In the same year, some limited powers to apprehend and prosecute offenders involved in railway property were conferred on the Force by enacting the **Railway Property (Unlawful Possession) Act, 1966**.
- Primarily RPF has been entrusted with **responsibility of the safety of Railway property**. But, while the provisions of RPF Act were soon found wanting for the maintenance of an effective and disciplined Force, the RPF Rules and Regulations too were found judicially unsound.
 - The RPF Act, 1957 was accordingly modified by **Parliament in 1985** for the constitution and maintenance of the Force as an armed force of the Union.

[Source: PIB](#)

Platygomphus Benritarum

Why in News?

Recently, a new species of dragonfly '*Platygomphus benritarum*' discovered in Assam has been named after two women for their pioneering work in the northeast.

- It has been named after Monisha Behal, a founder member of Northeast Network (NEN) and Rita Banerji, founder of Green Hub.



What are the Key Points?

- The species, a single male, was found by two researchers in June 2020 near the banks of the Brahmaputra in Assam.
- The male observed appeared to have freshly emerged judging by its shiny wings and abdomen.
- It has **turquoise blue eyes and dark brown face** covered with hair on the sides, was found resting on a large tree around 5-6 metres from the banks of Brahmaputra.
- The habitat along the banks is dominated by grasses, sparse trees, paddy fields and marshlands, along with some forest patches and tree plantations.
- Dragonflies and damselflies belong to the order **Odonata of insects**.
 - The order Odonata ("toothed ones") includes **some of the most ancient and beautiful**

insects that ever roamed Earth, as well as some of the largest flying invertebrates ever to have lived.

- Odonata consists of three groups: Anisoptera (which includes dragonflies), Zygoptera (which includes damselflies), and Anisozygoptera (a relict group represented by only two living species).

What are Dragonflies?

▪ **About:**

- It is an aerial predator insect most commonly found near freshwater habitats throughout most of the world.
- Their distinctive colors make them look beautiful. This makes them valuable subjects for research on insect behavior, both for ecology and art.

▪ **Habitat:**

- Most species of dragonflies live in the tropics and particularly in the rainforests.

▪ **Significance:**

- Dragonflies act as important bio-indicators of the ecological health of an area. As they feed on mosquitoes and other insects that are vectors to life-threatening diseases like Malaria and Dengue.

▪ **Threats:**

- The rapid destruction of their habitat poses a direct threat to their survival making their conservation urgent.

[Source: HT](#)

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