

GS Paper 3
Environment and Biodiversity – Sept'18

India's National REDD+ Strategy

In News

- Reiterating India's commitment to Paris Agreement, India has prepared REDD+ Strategy.
- The Strategy Report has been prepared by Indian Council of Forestry Research and Education (ICFRE), Dehradun.
- The Strategy builds upon existing national circumstances which have been updated in line with India's National Action Plan on Climate Change, Green India Mission and India's Nationally Determined Contribution (NDC) to UNFCCC.
- The National REDD+ Strategy will soon be communicated to the UNFCCC (United Nations Framework Convention on Climate Change).

Background

- In simple terms, REDD+ means "Reducing Emissions from Deforestation and forest Degradation", conservation of forest carbon stocks, sustainable management of forests, and enhancement of forest carbon stocks in developing countries.
- It aims to achieve climate change mitigation by incentivizing forest conservation. The strategy seeks to address drivers of deforestation and forest degradation and also developing a roadmap for enhancement of forest carbon stocks and achieving sustainable management of forests through REDD+ actions.
- Paris agreement on climate change also recognizes role of forests in climate change mitigation and calls upon country Parties to take action to implement and support REDD+.
- India has communicated in its Nationally Determined Contribution under Paris Agreement, that it will capture 2.5 to 3 billion tonnes of Carbon dioxide through additional forest & tree cover by 2030.
- India's first biennial update report to UNFCCC has revealed that forests in India capture about 12% of India's total GHG emissions. Thus, forestry sector in India is making a positive cost effective contribution for climate change mitigation.

Save Himalayan Springs

In News

CONTEXT: Shimla Water Crisis

- A NITI Aayog constituted group of experts has urged the government to set up a dedicated mission to salvage and revive spring water systems in the country's Himalayan States given their vital importance as a source of water for both drinking and irrigation for the region's inhabitants
- Spanning States across the country's north and northeast and home to about 50 million people, the Indian Himalayan Region (IHR) has been heavily reliant on these natural groundwater sources that are under increasing threat from the urbanisation caused by a constant push for development and climate change.
- Almost half of perennial springs have already dried up or have become seasonal and tens of thousands of villages are currently facing acute water shortage for drinking & other domestic purposes.

Shimla Crisis

- The extent of the crisis plaguing the mountainous region was recently evident when more than half a dozen districts of Himachal Pradesh and the State capital Shimla faced a severe drinking water crisis this May after major water sources either went fully or partially dry.
- While poor water management was said to be the key cause, according to State authorities, they also attributed reduced snowmelt and depressed flow from springs as contributors to the crisis.
- Also, with almost 64% of the cultivable area in the Himalayas fed by natural springs, they are often the only source of irrigation in the region.

Nature of Springs Water

- The report noted that there were also multiple sources of pollution in springs and these were due to both geogenic, or 'natural' causes and anthropogenic, or man-made, ones.
- Microbial content, sulphates and nitrates were primarily because of anthropogenic reasons and contamination from fluoride, arsenic and iron was mainly derived from geogenic sources.
- Coliform bacteria in spring water could originate from septic tanks, household wastewater, livestock facilities, and manure lagoons in the source area or in the aquifers feeding springs. Similarly, nitrate sources were septic tanks, household wastewater, agricultural fertilisers, and livestock facilities.

States Potential

While Meghalaya with 3,810 villages with springs had the highest number of these water sources in the Eastern Himalayan States, Sikkim had the greatest density with 94% of its villages having a spring. In the Western Himalayas, Jammu & Kashmir had both the highest number of villages with springs at 3,313 and the greatest density of 50.6%.

Task Force

- The group recommends "a multidisciplinary, collaborative approach of managing springs that will involve building upon the existing body of work on spring water management.
- The programme could be designed on the concept of an action-research programme as part of a hydrogeology-based, community-support system on spring water management."
- The task force moots an 8-year programme to overhaul spring water management. This includes: preparing a digital atlas of the country's springsheds, training 'para hydrogeologists' who could lead grassroots conservation and introduction of a 'Spring Health Card.

NGT Puts Curbs On Western Ghats States

- The six Western Ghats States, including Kerala, have been restrained by the National Green Tribunal (NGT) from giving environmental clearance to activities that may adversely impact the eco-sensitive areas of the mountain ranges.
- The panel directed that the extent of Eco-Sensitive Zones of Western Ghats, which was notified by the Central government earlier, should not be reduced in view of the recent floods in Kerala
- The *Madhav Gadgil-led Western Ghats Ecology Expert Panel (WGEEP) report* had created a political furore in the State with most of the political parties and a section of the church opposing it.

- The Tribunal Bench, in its order, noted that any alteration in the draft notification of zones may seriously affect the environment, especially in view of recent incidents in Kerala.

The WGEEP had earlier proposed “much larger areas for being included in the eco-sensitive zone” though the Kasturirangan-led High Level Working Group also appointed by the MoEF and CC to look into the WGEEP report, had reduced it. The Ministry had accepted the Kasturirangan report and issued the draft notifications on ecologically sensitive zones.

Integrated Development of Wildlife Habitats

In News

- Cabinet has approved the continuation of the Centrally Sponsored Umbrella Scheme of Integrated Development of Wildlife Habitats beyond 12th Plan.
- The Scheme consists of Centrally Sponsored Scheme of Project Tiger (CSS-PT), Development of Wildlife Habitats (CSS-DWH) and Project Elephant (CSS-PE).

Key Highlights

- A total of 18 tiger range States, distributed in five landscapes of the country would be benefitted under the Project Tiger scheme.
- Similarly, for other two schemes, the coverage is entire country in case of Development of Wildlife Habitats (DWH) and 23 elephant range States for Project Elephant. It would foster wildlife conservation in general with specific inputs for tiger in Project Tiger area and elephant in Project Elephant area.
- Besides immense environmental benefits and effective implementation of tiger conservation inputs in and around tiger reserves under Project Tiger, wildlife conservation inputs in Protected Areas & nearby areas under Development of Wildlife Habitats and Elephant conservation inputs in Project Elephant areas, the schemes would result in overall strengthening/ consolidation of tiger, elephant and wildlife conservation in the country.
- The schemes would address the human wildlife conflict effectively. Besides, the communities opting for voluntary relocation from the Core/Critical Tiger Habitat (6900 families) would be benefitted under Centrally Sponsored Scheme of Project Tiger (CSS-PT) and 800 families under Centrally Sponsored Scheme of Development of Wildlife Habitat.
- These schemes would generate employment opportunities resulting in economic upliftment of people in and around tiger reserves/ Protected Areas besides leading to reduction in natural resource dependency with substitution by clean energy use.
- These schemes would foster imparting various skills towards making people self-dependent through various eco-development projects, thereby enabling them to go for self-employment.
- It would result in resource generation through tourist visits, thereby fostering in securing tiger source areas and other areas important for wildlife conservation, besides being helpful in sustaining life support systems as well as ensuring the food, water and livelihood security.

Saving The World By Capturing Emissions

Context

Along with reducing emissions, India must promote the capturing of emissions to become the world leader in climate change mitigation.

Analysis

- Even if we miraculously stop emitting any carbon today, the planet will still undergo an average temperature increase of 0.6 degree Celsius because of the sheer amount of carbon already present in the atmosphere and oceans.:
- The hottest year on record without an El Nino event was 2017, with the average global temperature being one degree Celsius higher than pre-industrial levels.
- This was driven by an increase in energy demand in India and China, leading to global carbon emissions reaching a record high of 32.5 gigatons, reversing the plateau achieved in the three preceding years.
- The aim of the Paris agreement to limit the increase in average temperatures to 2 degrees Celsius in the short term and 1.5 degrees Celsius in the long run is now under serious threat.

Cause of Hope

- Yet, there remains a case for cautious hope. Global renewables-based electricity generation increased by 6.3% in 2017, now meeting a quarter of the world's energy demand growth.
- At the same time, cost of such resources is falling rapidly. Estimates from the International Renewable Energy Agency (IRENA) suggest that the global average cost of electricity generated from new onshore wind and solar photovoltaic sources already matches the cost of fossil fuel-fired electricity.
- Continuous technology improvements and competitive procurement practices mean that the cost of these renewables will become significantly cheaper than fossil fuel sources by 2020.
- Steady progress is also being made to shift the oil dependent transport sector towards renewable options. The International Energy Agency (IEA) estimated that the number of electric vehicles rose from 1.98 million in 2016 to 3.11 million in 2017, an increase of more than 54%.
- With our future hanging in the balance, 2018–2020 is a critical time for countries to peak and then flatten their emissions trajectory, while simultaneously implementing ambitious solutions for reducing them at pace.

Where The Focus Should Be

- A key factor behind the adoption of the Paris Agreement was its bottom-up approach, encouraging countries to come up with their own action plans to mitigate climate change—the nationally determined contributions (NDCs).
- While these NDCs have been successful in increasing individual responsibility, more work needs to be done as projections estimate an increase in global temperature of 2.7-3.7 degrees Celsius based on current NDCs.
- The 2018 UN Climate Change Conference (COP24) and the subsequent NDCs then become crucial in determining the political commitment to enhanced climate action. The revised NDCs

must include policies designed to promote the capture, storage and sequestration of carbon from the atmosphere and oceans.

- Carbon capture and storage (CCS) projects have had a chequered past. From ecological and ethical questions surrounding geo-engineering to the high costs involved in carbon neutral construction, large scale CCS programmes have traditionally limited themselves to afforestation as the means to capture emissions.
- While afforestation provides huge benefits and should be encouraged, it must be complemented by other initiatives that can capture emissions quickly and safely.
- One such initiative that has floundered in past, despite the technology being available, is capturing and storage of CO₂ from coal plants. This is simply because there is no market for stored CO₂.
- Policy frameworks included in future NDCs will benefit from:
 - (i) Actively promoting innovations and technologies that facilitate the safe re-utilization, rather than just the storage, of CO₂, thereby creating incentives for private investment.
 - (ii) Appropriately valuing the social benefit of decarbonization and reducing the costs borne by CO₂ storage companies accordingly.
 - (iii) Adopting best practices from successful global CO₂ capture programmes to develop the expertise needed.
- Another avenue for policymakers to consider is seaweed farming. It is estimated that the global commercial seaweed market will be worth \$87 billion by 2024.
- Farmed seaweed, with its exceptional ability to capture CO₂ from the oceans and produce bio-digested methane which can be substituted for natural gas, can play a substantive role in reducing carbon emissions.
- The relatively low production cost, the speed at which seaweed grows, the vast potential of the Indian coastline and the subsidies and grants offered by the government, are strong incentives for private sector expansion into seaweed farming.

Way Forward

How we mitigate climate change is a defining question for our generation. The commitment must be steadfast. Setting ambitious goals, scaling up infant technologies and fostering markets for capturing emissions will be key to our success.

Cloudy Forecast: On Climate Change

Context

Climate change financing facing challenges with USA opting out of Paris climate deal.

Issue

- The conference of the UN Framework Convention on Climate Change in Bangkok in Sept', that was to draft a rulebook for the Paris Agreement ahead of a crucial international conference in Poland in December, ran into predictable difficulties over the issue of raising funds to help poorer nations.
- Some developed countries led by the U.S. — which, under the Trump administration, has rejected the agreement — are unwilling to commit to sound rules on raising climate finance.

- Under the pact concluded in Paris, rich countries pledged to raise \$100 billion a year by 2020 to help developing countries reduce their greenhouse gas (GHG) emissions and aid populations to cope with extreme events such as floods, droughts and storms.
- Obstructing the transition to a carbon-neutral pathway and preserving the status quo is short-sighted, simply because the losses caused by weather events are proving severely detrimental to all economies.
- By trying to stall climate justice to millions of poor people in vulnerable countries, the developed nations are refusing to accept their responsibility for historical emissions of GHGs.
- Those emissions raised living standards for their citizens but contributed heavily to the accumulated carbon dioxide burden, now measured at about 410 parts per million of CO₂ in the atmosphere, up from 280 ppm before the industrial revolution.

India and China Conundrum

- There is international pressure on China and India to cut GHG emissions. Both countries have committed themselves to a cleaner growth path.
- India, which reported an annual CO₂ equivalent emissions of 2.136 billion tonnes in 2010 to the UNFCCC two years ago, estimates that the GHG emissions intensity of its GDP has declined by 12% for the 2005-2010 period.
- As members committed to Paris Agreement, China and India have the responsibility of climate leadership in developing world, and have to green their growth. What developing countries need is a supportive framework in the form of a rulebook that binds the developed countries to their funding pledges, provides support for capacity building and transfer of green technologies on liberal terms.
- If scientific estimates are correct, the damage already done to the West Antarctic Ice Sheet is set to raise sea levels; a 2° Celsius rise will also destabilise the Greenland Ice Sheet.
- Failed agriculture in populous countries will drive more mass migrations of people, creating conflict. A deeper insight on all this will be available in Oct' when the Intergovernmental Panel on Climate Change releases its scientific report on the impact of a 1.5° C rise in global average temperature.
- This is the time for the world's leaders to demonstrate that they are ready to go beyond expediency and take the actions needed to avert long-term catastrophe.

70% Chance Of El Nino Event This Year

Context

An El Nino event that could disrupt global weather is likely by end of what has already been a hot year.

What WMO Is Expecting

- The World Meteorological Organisation (WMO) has forecasted "a 70 percent chance of an El Nino developing by the end of this year".
- El Nino is triggered by periodic warming in the eastern Pacific Ocean which can trigger drought in some regions, heavy rain in others. WMO does not expect the anticipated El Nino to be as powerful as the 2015-2016 event, but it will still have considerable impacts.

- The organisation sees increased odds of higher surface temperatures in most of Asia-Pacific, Europe, North America, Africa and along much of South America's coastline.

The WMO is an intergovernmental organization with a membership of 191 Member States and Territories. It originated from the International Meteorological Organization (IMO), which was founded in 1873. Established by the ratification of the WMO Convention on 23 March 1950, WMO became the specialised agency of the United Nations for meteorology (weather and climate), operational hydrology and related geophysical sciences a year later. The Secretariat, headquartered in Geneva, is headed by the Secretary-General. Its supreme body is the World Meteorological Congress

Ocean Cleanup Team Heads To The Pacific

Context

Their target is the eastern Pacific and what's called the Great Garbage Patch, where circular currents have concentrated plastic in one large area.

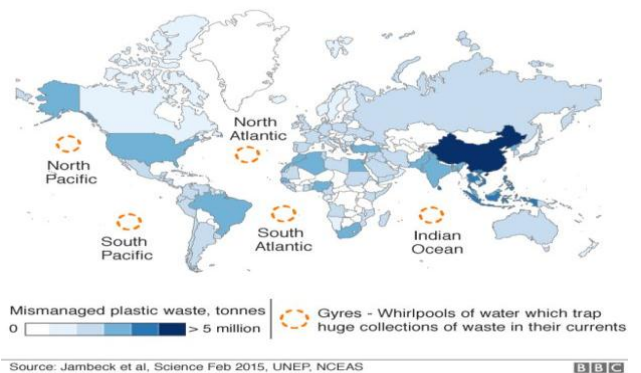
What Is It

A supply ship towing a long floating boom designed to corral ocean plastic has set sail from San Francisco for a test run ahead of a trip to the Great Pacific Garbage Patch. The ambitious project by The Ocean Cleanup, a Dutch non-profit group, hopes to clean up half of the infamous garbage patch within five years once all systems are deployed.

Key Highlights

- The supply vessel was towing a 600 meter-long boom device dubbed System 001, designed to contain floating ocean plastic so it can be scooped up and recycled. The system includes a tapered three-meter skirt to catch plastic floating just below the surface. The key point is that the collection system is passive - there are no motors, no machines. Instead, it'll drift, acting like an artificial coastline, gently gathering any plastic in its path.
- The ship was heading to a spot 240 nautical miles off the California coastline for a two-week trial before sailing to the Great Pacific Garbage Patch, a floating trash pile twice the size of France that swirls in the ocean halfway between California and Hawaii.
- Plastic waste: The project team believes the Pacific garbage patch contains some 80,000 metric tonnes of plastic waste. The aim is to halve the amount of pollution in the patch every five years so that by 2040 almost all of it will be gone. Plastic has started to accumulate in the ocean since the 1950s. Land-based plastic comes mainly from rivers.

Ocean plastic



Green Agriculture

The Green Agriculture project synergises biodiversity conservation, agriculture production, and development.

Role of Biodiversity

- India is signatory to the Convention on Biological Diversity. As four of the 35 biodiversity hotspots are located in India, it is biodiversity-rich. However, climate change and development without consideration for biodiversity are leading to loss of biodiversity. India's National Biodiversity Action Plan (NBAP) recognises the importance of biodiversity for inclusive development.
- The Green Agriculture project implemented by the Indian government and the Food and Agricultural Organisation (FAO) takes a novel approach to support the NBAP and synergise biodiversity conservation, agriculture production and development.
- It is being implemented in five landscapes adjoining Protected Areas/Biosphere Reserves: *Madhya Pradesh, Mizoram, Odisha, Rajasthan and Uttarakhand*. It envisages a transformation in Indian agriculture for global environmental benefits by addressing land degradation, climate change mitigation, sustainable forest management, and biodiversity conservation.
- Man-animal conflicts in the fringes of Protected Areas or animal corridors, and conflicts over unsustainable procurement of non-timber forest products (NTFPs) have been contentious, especially in Odisha and Uttarakhand.
- A *participatory and landscape approach* can ensure sustainability of conservation efforts. Keeping the focus on initiatives for sustainable NTFP harvest, eradication of invasive alien species, and mitigation of wildlife conflicts is essential.
- The landscape approach will aim to restore traditional knowledge systems, such as the conservation of common property resources. Examples include the Orans of Rajasthan and the village safety and supply reserves in Mizoram. Traditional farming systems such as jhum encouraged crop diversity. However, climate change and shortened fallow cycles are undermining jhum cultivation sustainability. Participatory learning tools will encourage farmers to adopt more sustainable indigenous soil conservation.
- India gave the world crops such as rice, chickpea, pigeon pea, mango and eggplant. However, with the focus on policies that cater to market demands, its reservoir of indigenous traditional crops has dwindled. Most keepers of these crop genetic diversity are smallholder farmers, including women.
- The approach will be to strengthen their role as agrodiversity guardians by developing value chains for their indigenous crops such as traditional rice varieties in Odisha.
- Environmental concerns are inadequately reflected in the development rhetoric. Thus, projects such as Green Agriculture are essential in equipping decision-makers with the necessary instruments to design effective and informed policies to underpin environmental concerns.

Snow Leopard Spotted

In News

- Snow leopard was spotted in Himachal Pradesh's Kinnaur district. The footage of elusive snow leopards were captured in the remote areas of Lippa Asrang, signifying that there is plenty of prey for the wild cats.

- Lippa-Asra wildlife sanctuary in Kinnaur district is located at a height of around 4,000 metres while snow leopards are usually found between 9,800 and 17,000 feet in high and rugged terrain.
- Snow leopards are given the same protection as the tiger, listed under Schedule I of the Wildlife (Protection) Act, 1972 – the highest protection afforded to a species.
- It is listed as Vulnerable on the IUCN Red List of Threatened Species.

India Cooling Action Plan

In News

- India is the first country in world to develop such a document (ICAP), which addresses cooling requirement across sectors and lists out actions which can help reduce the cooling demand.
- This will help in reducing both direct and indirect emissions. The thrust of the ICAP is to look for synergies in actions for securing both environmental and socio-economic benefits.

Key Highlights

- The overarching goal of ICAP is to provide sustainable cooling and thermal comfort for all while securing environmental and socio-economic benefits for the society.
- The goals emerging from the suggested interventions stated in ICAP are:
 - (i) Recognition of “cooling and related areas” as a thrust area of research under national science and technology programme to support development of technological solutions and encourage innovation challenges,
 - (ii) Reduction of cooling demand across sectors by 20% to 25 % by year 2037-38,
 - (iii) Reduction of refrigerant demand by 25% to 30% by year 2037-38,
 - (iv)(iv) Reduction of cooling energy requirements by 25% to 40% by year 2037-38, and
 - (v) Training and certification of 100,000 servicing sector technicians by the year 2022-23, in synergy with Skill India Mission.
- The broad objectives of the India Cooling Action Plan include –
 - Assessment of cooling requirements across sectors in next 20 years and the associated refrigerant demand and energy use,
 - Map the technologies available to cater the cooling requirement including passive interventions, refrigerant-based technologies and alternative technologies such as not-in-kind technologies,
 - Suggest interventions in each sector to provide for sustainable cooling and thermal comfort for all,
 - Focus on skilling of RAC service technicians, and
 - Develop an R&D innovation ecosystem for indigenous development of alternative technologies.
- Recognizing that integrated actions, taking a holistic view on the cooling requirement across sectors with long term perspective (20 years) will have a higher impact than either of the actions taken in isolation, the Ministry had initiated the process for developing the Cooling Action Plan in July 2017.

World Ozone Day

In News

- It is Celebrated every year on 16th September.
- **Theme: Keep Cool and Carry on: The Montreal Protocol**

About Montreal Protocol

- The Montreal Protocol is the only environmental treaty which enjoys universal ratification of 197 UN members countries. The Montreal Protocol on Substances that Deplete the Ozone Layer has been recognized as the most successful international environment treaty in history.
- Its implementation has not only led to the phase-out of around 98% of ozone depleting chemicals, but also averted more than 135 billion tonnes of carbon dioxide equivalent emissions. Nearly 2 million cases of skin cancer per year have been averted globally.

What Are Ozone Depleting Substances

- Ozone depleting substances (ODSs) are those substances which deplete the ozone layer and are widely used in refrigerators, air conditioners, fire extinguishers, in dry cleaning, as solvents for cleaning, electronic equipment and as agricultural fumigants.
- Ozone depleting substances controlled by Montreal Protocol include:
 - Chlorofluorocarbons (CFCs)
 - Halon
 - Carbon tetrachloride (CCl₄), Methyl chloroform (CH₃CCl₃)
 - Hydrobromofluorocarbons (HBFCs), Hydrochlorofluorocarbons (HCFCs)
 - Methyl bromide (CH₃Br)
 - Bromochloromethane (CH₂BrCl)

Why Focus On Cooling

- Cooling has been recognized as an important development need due to cross-sectoral nature and considerable use of cooling and air conditioning in different Sectors of the economy such as industries, residential and commercial buildings, cold chain, transport (personal, commercial, metro and railways, ships).
- The integration of topics on HCFC phase out and energy efficiency in architectural curriculum will help the future architects to introduce energy efficiency and use ozone friendly materials in new construction of buildings. This will help not only in the protection of Ozone layer, but also reduce energy consumption in building sector, which is one of the significant consumers of electricity in urban areas.

WAYU

In News

- **Wind Augmentation PurifYing Unit (WAYU)** is developed by Council of Scientific and Industrial Research –**National Environmental Engineering Research Institute (CSIR-NEERI)** as a part of Technology Development Project being funded by Department of Science and Technology.

- The prototype device that has been indigenously developed has the capacity to purify air in an area of 500 meter square.

Key Highlights

- The device consumes only half a unit of electricity for 10 hours of running and has a maintenance cost of only Rs. 1500 per month.
- **The device works on two principles mainly Wind generation for dilution of air pollutants and Active Pollutants removal.**
- The device has filters for Particulate Matter removal and activated carbon (charcoal) and **UV lamps for poisonous gases removal** such as VOCs and Carbon Monoxide.
- The device has one fan and filter for sucking and removing Particulate Matter. There are two UV lamps and half kg of activated carbon charcoal coated with special chemical Titanium Dioxide.

More River Stretches Are Critically Polluted

In News

In its 2015 report, the Central Pollution Control Board (CPCB) identified 302 polluted stretches on 275 rivers, spanning 28 States and six Union Territories.

Key Highlights

- The number of polluted stretches of the country's rivers has increased to 351 from 302 two years ago, and the number of critically polluted stretches — where water quality indicators are the poorest — has gone up to 45 from 34, according to an assessment by the CPCB.
- While the ₹20,000 crore clean-up of the Ganga may be the most visible of the government's efforts to tackle pollution, the CPCB says several of the river's stretches — in Bihar and Uttar Pradesh — are actually far less polluted than many rivers in Maharashtra, Assam and Gujarat. These three States account for 117 of the 351 polluted river stretches.
- Based on the recommendations of the National Green Tribunal, the CPCB in August, 2018 apprised the States of the extent of pollution in their rivers.
- Mithi among the worst - The most significant stretches of pollution highlighted by the CPCB assessment (which is yet to be published) include the Mithi river — from Powai to Dharavi — with a BOD (Biochemical Oxygen Demand) of 250 mg/l; the Godavari — from Someshwar to Rahed — with a BOD of 5.0-80 mg/l; the Sabarmati — Kheroj to Vautha — with a BOD of 4.0-147 mg/l; and the Hindon — Saharanpur to Ghaziabad — with a BOD of 48-120 mg/l.

Graded Scale

- The CPCB, since the 1990s, has a programme to monitor the quality of rivers primarily by measuring BOD, which is a proxy for organic pollution — the higher it is, the worse the river.
- The health of a river and the efficacy of water treatment measures by the States and municipal bodies are classified depending on BOD, with a BOD greater than or equal to 30 mg/l termed 'priority 1,' while that between 3.1-6 mg/l is 'priority 5.'
- The CPCB considers a BOD less than 3 mg/l an indicator of a healthy river.

Biochemical Oxygen Demand (BOD, also called Biological Oxygen Demand) is the amount of dissolved oxygen needed (i.e. demanded) by aerobic biological organisms to break down organic material present in a given water sample at certain temperature over a specific time period. The BOD value is most commonly expressed in milligrams of oxygen consumed per litre of sample during 5 days of incubation at 20 °C and is often used as a surrogate of the degree of organic pollution of water.

BOD is similar in function to chemical oxygen demand (COD), in that both measure the amount of organic compounds in water. However, COD is less specific, since it measures everything that can be chemically oxidized, rather than just levels of biodegradable organic matter.

PM Narendra Modi Gets Top United Nations Environmental Honour

In News

- Prime Minister Narendra Modi was awarded the United Nations' Champions of the Earth award for the year 2018.
- The United Nations recognised Modi with its highest environmental honour in the policy leadership category for his extensive efforts to 'Beat Plastic Pollution'- *including an ambitious pledge to eliminate all single-use plastic in the country by 2022.*
- President of France, Emmanuel Macron has also been awarded in the same category for his work on the Global Pact for the Environment.
- Cochin International Airport was also awarded for its leadership in use of sustainable energy in the category of entrepreneurial vision.
- The airport is world's first fully solar-powered airport.
- The other three winners are: Joan Carling ,Beyond Meat and Impossible foods and China's Zhejiangs Green Rural Revival Programme.

- The Champions of the Earth award is the United Nations highest environmental honour recognizing visionary people and organisations all over the world that exemplify leadership and advocate action on sustainable development, climate change and a life of dignity for all.
- Launched in 2005, Champions of the Earth has recognized dozens of exemplary individuals and organizations. Through their extraordinary achievements – whether through political leadership, grassroots action, scientific innovation, or entrepreneurial vision – each of these Champions has inspired critical action on behalf of the global environment.
- It is awarded by UNEP.
- Past laureates include: Afroz Shah, who led the world's largest beach cleanup (2016), Rwandan President Paul Kagame (2016), former US Vice-President Al Gore (2007), Ocean Cleanup CEO Boyan Slat (2014), scientist-explorer Bertrand Piccard, and developer of Google Earth Brian McClendon (2013)