Environment FOR You 2021

ASPIRE IAS
The Name Associated with Excellence

GOOD MORNING TIMES

Environment

(MARCH -2021)

Environment FOR You 2021

TOPIC GENERAL STUDIES 3: CONSERVATION, ENVIRONMENTAL POLLUTION AND DEGRADATION, ENVIRONMENTAL IMPACT ASSESSMENT

March -2020

1) JAL SHAKTI ABHIYAN: CATCH THE RAIN CAMPAIGN

Why in News?

National Water Mission (NWM), Ministry of Jal Shakti in collaboration with Nehru Yuva Kendra Sangathan (NYKS),Ministry of Youth Affairs & Sports recently launched the "JSA II: Catch the Rain" Awareness Generation Campaign.

About Jal Shakti Abhiyan: Catch the Rain Campaign

1) The campaign has been launched with tag line "catch the rain, where it falls, when it falls" and will run from 22nd March 2021- 30th November 2021. In seeks to nudge all stakeholders to create Rainwater Harvesting Structures (RWHS) suitable to the climatic conditions and sub-soil strata.
2) To facilitate these activities, states have been requested to open "Rain Centers" in each district—in Collectorates/Municipalities or GP offices.
    a. During this period, these Rain Centres will have a dedicated mobile phone number and will be manned by an engineer or a person well trained in RWHS.
    b. This centre act as a technical guidance centre to all in the district as to how to catch the rain, as it falls, where it falls.
3) The collaboration with NYKS is a step to engage people at the grassroots through effective campaigning & IEC activities for implementation of the campaign.
4) Activities to be taken up under the campaign:
    a. Drives to make water harvesting pits, rooftop RWHS and check dams;
    b. removal of encroachments and de-silting of tanks to increase their storage capacity;

c. removal of obstructions in the channels which bring water to them from the catchment areas;
d. repairs to traditional water harvesting structures like stepwells and using defunct borewells and old wells to put the water back to aquifers.

About Rainwater harvesting

Rainwater harvesting is the accumulation and storage of rainwater for reuse on-site, rather than allowing it to run off.

Common methods of RWHS include:

1. Rooftop Rainwater harvesting: This method uses the water collected on terraces and rooftops of houses and buildings. It is best applied in residential areas of towns and cities.
2. Surface run-off rainwater harvesting: This method is used for collecting rainwater flowing through open spaces like roads, grounds, hill, etc. This water is stored underground and is used for public purposes like watering in gardens, roadside trees, beautification, etc.
3. Recharge pits: These are large tank shaped pits dug for storing water usually adjacent to hills, or in fields. These can be used for irrigation. As the name suggests, these have an added advantage of recharging the aquifers.
4. Gully Plugs: Gully plugs are smaller pits built at regular intervals in an open area where rainwater is likely to run through. It ensures that rainwater is saved at many sites.
5. Contours: Contours are similar to gully plugs but narrow and long bands.

What are traditional water conservation systems around India?

1. **Phad** – It is a community-managed irrigation system in the tapi river basin in Maharashtra. It starts with check dam built across a river and canals to carry water to agricultural blocks with outlets to ensure excess water is removed from the canals.
2. **Zing** – It is found in Ladakh, are small tanks that collect melting glacier water. A network of guiding channels brings water from the glacier to the tank.
3. **Kuhls** – They are surface water channels found in the mountainous regions of Himachal Pradesh. The channels carry glacial waters from rivers and streams into the fields.

4. **Zabo or Ruza System**– It is practised in Nagaland. Rainwater that falls on forested hilltops is collected by channels that deposit the run-off water in pond-like structures created on the terraced hillsides.
5. **Jackwells -** The Shompen tribe of the Great Nicobar Islands uses this system, in which bamboos are placed under trees to collect runoff water from leaves and carries it to jackwells which are pits encircled by bunds made from logs of hard wood.
6. **Pat system** – It is developed in Madhya Pradesh, in which the water is diverted from hill streams into irrigation channels by diversion bunds. They are made across the stream by piling up stones and teak leaves and mud.
7. **Eri** – It is tank system, widely used in Tamil Nadu which acts as flood-control systems, prevent soil erosion and wastage of runoff during periods of heavy rainfall, and also recharge the groundwater.
8. **Johads –** They are small earthern check dams used to conserve and recharge ground water, mainly constructed in an area with naturally high elevation.
9. **Panam keni** – The Kuruma tribe (a native tribe of Wayanad) uses wooden cylinders as a special type of well, which are made by soaking the stems of toddy palms and immersed in groundwater springs.
10. **Ahar Pynes** – They are traditional floodwater harvesting systems indigenous to South Bihar. Ahars are reservoirs with embankments on three sides and Pynes are artificial rivulets led off from rivers to collect water in the ahars for irrigation in the dry months.
11. **Jhalara -** Jhalaras are typically rectangular-shaped stepwells that have tiered steps on three or four sides in the city of Jodhpur.
12. **Bawari -** Bawaris are unique stepwells that were once a part of the ancient networks of water storage in the cities of Rajasthan.
13. **Taanka** - It is a cylindrical paved underground pit into which rainwater from rooftops, courtyards or artificially prepared catchments flows. It is indigenous to the Thar Desert region of Rajasthan.
14. **Khadin** – Also called dhora, is a long earthen embankment that is built across the hill slopes of gravelly uplands. It is indigenous to Jaisalmer region and similar to the irrigation methods of Ur region (Present Iraq).

15. **Kund** – It is a saucer-shaped catchment area that gently slopes towards the central circular underground well. It is found in the sandier tracts of western Rajasthan and Gujarat.

2) NATIONAL RIVER LINKING PROJECT (NRLP)

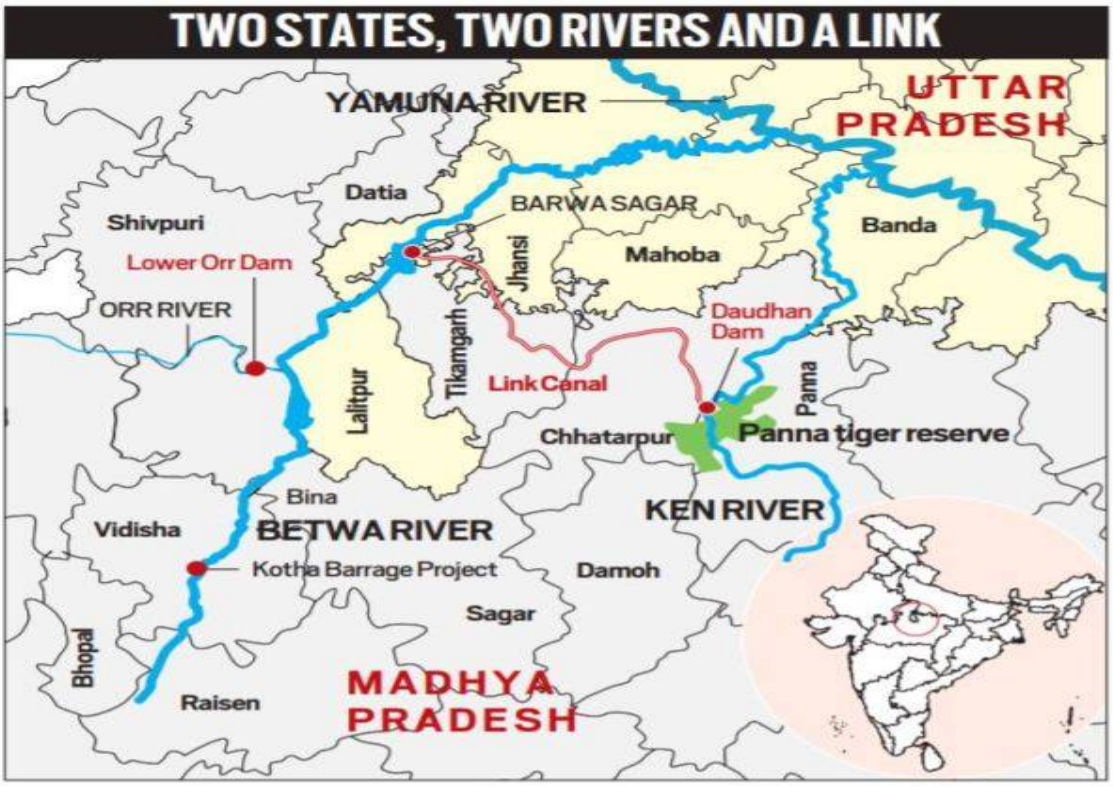
Why in news?

On the occasion of World Water Day (22 March), a memorandum of agreement was signed between Union Minister of Jal Shakti and the chief ministers of Madhya Pradesh and Uttar Pradesh to implement the Ken-Betwa Link Project (KBLP).

More about news

1. The KBLP is the first project under the National River Linking Project (NRLP). Under this project water from the Ken River will be transferred to the Betwa River. Both these rivers are tributaries of River Yamuna.
2. It would be implemented in 2 phases.
    a. Phase-I: Daudhan dam complex and its appurtenances like Low Level Tunnel, High Level Tunnel, KenBetwa link canal and Power houses will be completed.
    b. Phase-II: Lower Orr dam, Bina complex project and Kotha barrage will be constructed.
3. The Centre will create a special purpose vehicle, the Ken- Betwa Link Project Authority, for implementation of the project in eight years and will bear 90% of the total cost.

Environment FOR You 2021



About National River Linking Project (NRLP)

• The idea of interlinking of rivers was first proposed by Sir Arthur Cotton in 1850s. It was then revived in 1972 by K.L. Rao, then India's minister of power and irrigation.

• Subsequently, a total of 30 river links were identified under NRLP formally known as the National Perspective Plan across.

• It envisages the transfer of water from water 'surplus' basins where there is flooding to water 'deficit' basins where there is drought/scarcity, through interbasin water transfer projects.

• It is being managed by the National Water Development Agency (NWDA). The project is also called as the inter-basin transfer of water which includes three components:

o The northern Himalayan rivers interlinking component.

o The southern peninsular component.

o The intrastate river linking component.

• On completion of the project country will have 30 river links, 3,000 storage structures, a canal network stretching almost 15,000 km and can generate 34 GW of

hydroelectric power, create some 87 million acres of irrigated land, and transfer 174 trillion liters of water a year.

Challenges in making NRLP a success

• Adverse human-ecological impact

o Displacement and rehabilitation of people: Around 580,000 people face the threat of displacement due to river linking projects. Rehabilitation of these many people would pose a great challenge before the administration. Here, it is to be noted that those who were evicted for the construction of the Bhakra and the Pong dams, two of the oldest in India, have still not been fully rehabilitated.

o Huge adverse impacts on the ecology: Changes in the hydrological profile of Indian rivers, whether by climate change or changes in the volume of water withdrawn from them, could leave current surplus rivers with a deficit.

Moreover, these projects would lead to submergence of huge areas of land, forest, flora and fauna. Thus, it may create ecological disruption. For example: It is estimated that the KBLP will lead to a loss of "10,500 hectares of wildlife habitat" in the Panna Tiger Reserve.

• Implementation challenges:

o High economic cost: The KBLP is estimated to cost approximately Rs 38,000 crore and the initial cost of the whole river interlinking project is estimated to be at ₹5.6 lakh crore.

o Bringing States on board: To implement the project successfully, the Government will have to convince States to come on board, as water is a State subject. For example: Uttar Pradesh and Madhya Pradesh had a dispute over sharing of water and other benefits.

o Legal challenges: It would be difficult to get all the mandated 4-5 types of clearances on time. Delay in clearance may increase the cost of the project.

These clearances are :

a) Techno-economic (given by the Central Water Commission);

b) Forest Clearance and Environmental clearance (Ministry of Environment & Forests);

c) Resettlement and Rehabilitation (R&R) Plan of Tribal Population (Ministry of Tribal Affairs)

d) Wildlife clearance (Central Empowered Committee).

• Bad international experience: China, which also faces recurrent droughts and floods simultaneously, started its south-north water transfer project to transfer extra water from the southern part to the dry northern part. The project has dislocated farmers and even increased the incidence of drought in some parts of the southern province where rivers are already running dry.

National Water Development Agency (NWDA)-

• It was set up in 1982 as Autonomous Society under the society's registration act 1860.
• It functions under the Ministry of Jal Shakti.
• Initially its purpose was to carry out the water balance and other studies on a scientific and realistic basis for optimum utilization of water resources of the peninsular river system.
• Functions
o Manage the 3 components of NRLP.
o Completion of water resources projects under Pradhan Mantri Krishi Sinchai Yojana (PMKSY).
o Act as a repository of borrowed fund or loan from Banks/ other institutions for the execution of projects.

Way ahead

• Overcoming implementation challenges
o Special implementing body: In 2014 the Supreme Court had directed the Government to create an appropriate body to plan, constructs, and implement this massive project. Institutionalizing such a body would expedite the implementation of the project.
o Concerned states should meet halfway on the deal: The dispute between the states could be settled by ensuring some gain and some loss for all the concerned states. For example, in KBLP Uttar Pradesh agreed to drop its demand for a higher share and Madhya Pradesh is also not allowed to use the entire quantum of surplus water at the Daudhan dam site in the upper catchment area.

• Explore alternative options: Some experts suggest that such grand infrastructure projects are not the only options available to India. Other options could have equal or better outcomes for water security. Small-scale conservation i.e, traditional practices of water conservation, which are effective and also environment friendly, need to be adopted to tackle the problem of drought. They include

o Increased irrigation efficiency

o Growing crops that are appropriate for the climatic conditions of the region in which they are grown o Managing water demand

o Increasing rainwater harvesting

o Ensuring that existing infrastructure is maintained and operating effectively Conclusion NRLP has its own boon and bane. Therefore, a balanced path of development could be pursued through a mix of traditional water conservation methods with the river linking projects. River linking projects should be considered as the last resort.

3) FLOOD MANAGEMENT

Why in news?

NITI Aayog recently released a report on Strategy for Flood Management in the country.

More on news

The report is prepared by a Committee for Formulation of Strategy for Flood Management Works in Entire Country and River Management Activities and Works Related to Border Areas (2021– 26).

Flood situation in India

• Flooding is caused by the inadequate capacity within the banks of the rivers to contain the high flows brought down from the upper catchments.

• Flooding is a normal process during monsoon and to some extent, it is needed to carry out some natural processes like bringing alluvial soil to fields, groundwater recharge or replenishment of waterbodies.

• India is highly vulnerable to floods. Out of the total geographical area of 329 million hectares (mha), more than 40 mha is flood prone (around 12% of the total area of India).

• In recent times, flood related damages show an increasing trend and floods have also occurred in areas, which were earlier not considered flood prone.

• Some of the biggest flood disasters in the last 10 years include Uttarakhand in 2013, Kashmir in 2014, Chennai in 2015, Kerala in 2018 and 2019 and Patna in 2019 besides the recurring floods in north-eastern India.

• According to the Central Water Commission, the expenditure on flood management has risen from Rs. 43.44 billion in tenth five-year plan (2002-07) to Rs 171.30 billion in 11th five-year plan (2007-12).

Existing Flood Management Mechanisms in India

• Statutory Provisions

o The subject of flood control does not figure as such in any of the three legislative lists included in the 7th schedule of the Constitution.

o However, Drainage and Embankments, are two of the measures specifically mentioned in entry 17 of List II (State List), subject to Entry 56 of List I (Union List).

o It may thus be seen that the primary responsibility for flood control and the subject "flood management" falls within the purview of the States. Therefore, the schemes for flood control are planned, investigated and implemented by the States as per priorities within the State with their own resources.

o The role of central government is technical, advisory, catalytic and promotional in nature.

- ✓ The central government has taken various initiatives and set up a number of organizations dealing with the floods. The most notable one is the enactment of the National Disaster Management Act, 2005 and setting up of the NDMA, which has been assigned to deal with all types of disasters including the floods.

• Existing approaches to manage flood: Different measures have been adopted to reduce the flood losses and protect the flood plains. Depending upon the nature of work, Flood protection and flood management measures may be broadly classified as Structural and Non-structural:

o **Structural Approaches include**

- ✓ An artificially created reservoir behind a dam across a river that can moderate the intensity and timing of the incoming flood.

- ✓ Detention basins/Wetlands usually formed by utilizing natural depressions/ swamps and lakes by improving their capacity for regulating the release of stored waters.
- ✓ Diversion of a part of the peak flow to another river or basin, where such diversion would not cause appreciable damage.
- ✓ By constructing a parallel channel bye passing a particular town/reach of the river prone to flooding.
- ✓ Creating Embankments which artificially raise the effective riverbank and thereby prevent spilling and
- ✓ Channel and drainage improvement works, which artificially reduce the flood water level so as to keep the same, confined within the riverbanks and thus prevent spilling.

o **Non-structural/ Administrative Measures include**

- ✓ Facilitating timely evacuation of the people and shifting of their movable property to safer grounds by having advance warning of incoming flood i.e., flood forecasting, flood warning in case of threatened inundation.
- ✓ Discouraging creation of valuable assets/settlement of the people in the areas subject to frequent flooding i.e., enforcing flood plain zoning regulation.

Challenges in flood management

• Resistance on part of states to implement the flood plain zoning approach. Passive resistance among the state to implement the model draft bill, 1975 for flood plain zoning legislation including possible legislation.

• Divergent views on the utility of constructing embankments due to the insufficient number of performance evaluation studies of existing embankments. It has been experienced that while some embankments have provided sustained protection against floods, some have aggravated the flood problem by raising riverbed levels. For instance, in 2007 Kosi floods in Bihar, the river had broken the embankments at more than 30 places.

• Land-use policy: India's land policy hasn't been congenial for efficient flood management due to various political, social and economic reasons. Modern land use gradually encroaching on the natural environment has an impact on all three dimensions of flood risk, namely hazard, vulnerability and exposure.

• Lack of an integrated approach: The flood protection works are done more as a fire-fighting manner instead of an integrated manner, i.e., covering the entire river

or a tributary or a major segment of it. Also, the complete river morphology not studied before the implementation of the piece-meal approach of the channelization/embankment projects.

• Lack of coordination among agencies: Various organizations are working at different levels across the country, but the problem is in synchronization, collaboration or coordination among these agencies affecting their effective and efficient functioning.

• Outdated estimates: The figure of the flood-prone area i.e., 40 to 50 million hectares is very old and is related to notified riverine flood areas. However, in the last few years, the form and extent of floods have changed a lot with increased instances of urban flooding. This requires re-mapping of the entire flood-prone area to get a realistic picture.

Recent steps taken

• NDMA has released National water policy 2012 suggesting that reservoir operation procedures should be evolved and implemented in a manner so as to have flood cushion and to reduce trapping of sediment during flood season.

o It has also suggested incorporating coping strategies for possible climate changes, such as increasing water storage capacity in dams.

• NDMA had issued guidelines on Urban Flood Management in India which includes measures such as creating a National Hydro-meteorological Network for providing early warning, use of Doppler Weather Radars in all urban areas, inventory of the existing storm water drainage system etc.

• In the last few years, India has focused on building a robust early flood warning system for better flood resilience.

o Chennai became the first city in India to get an intelligent flood warning system.

o Mumbai got the integrated flood warning system (IFLOWS) in June 2020.

o TERI is now launching a similar flood forecasting system for Assam which has been prepared in collaboration with the IMD and the NDMA.

Recommendations of the NITI Aayog Report

a. National Water Model: This model can be used to feed the information into a decision support system which can provide support services to Nation by predicting precipitation and forecasting flood and other water related events.
b. Extension of Flood Management and Border Area Programme: The committee has also proposed to extend the (FMBAP) for the period of 2021-26, with the provision of inclusion of new projects for funding under the scheme.
c. Legislative actions to ensure Dam safety: Passing of Dam Safety Bill to be taken up on priority and Integrated Reservoir Operation (IRO) for flood management to be promoted by giving Central Government a proactive role and mandate.
d. Formation of Flood Management Plans can help in rescue and relief works during and after the floods.
    i. Some successful examples of floodplain restoration includes Rhine Delta, Netherlands and the river Skerne, UK.
e. Emphasize the use of advanced technology like artificial intelligence, satellites, remote sensing and GIS for flood forecasting and warning systems.
f. Improvised city planning: In order to check the threat of urban flooding, each city should have their flood mitigation plans (floodplain, river basin, surface water, etc.) amalgamated within the overall land use policy and master planning of the city.
    i. Yongning river park in Taizhau, China has been designed as wetlands or floodplains to allow periodic flooding.
g. Balancing between the Structural and Non-Structural Measures: Priority must be given to non-structural measures such as flood forecasting, flood plain zoning, flood proofing etc. to mitigate the floods and long term and medium-term structural measures shall be used when and where those are unavoidable.
h. Integrated flood management which calls for a paradigm shift from the traditional, fragmented and localized approach and encourages the use

of the resources of a river basin as a whole and setting up of River Basin Organization for its effective implementation.

   i. For example, Buoyant buildings or “Amphibian houses”- which sit on dry but can float vertically during flooding- have been built in Maasbommel (Netherlands).

i. Data Collection: Continuous efforts to be made towards modernization in collection of hydrometeorological data, flood forecast formulation and forecast dissemination. Further simplified data dissemination policy for use of data by the States particularly regarding trans-boundary rivers to be developed.

Flood Management and Border Areas Programme (FMBAP)

• The Scheme "FMBAP" has been framed by merging the components of two continuing XII Plan schemes titled "Flood Management Programme (FMP)" and "River Management Activities and Works related to Border Areas (RMBA)".

• The aim of the Scheme is to assist the State Governments to provide reasonable degree of protection against floods in critical areas by adopting optimum combination of structural and non-structural measures and enhancing capabilities of State/Central Government officials in related fields.

• The Scheme caters to Hydro-meteorological observations, Flood Forecasting and survey and investigations of water resources projects on common rivers with the neighbouring countries like Pancheshwar Multipurpose Project, Sapta Kosi-Sun Kosi Projects in Nepal.

4) CLIMATE-RESILIENT GRAINS

Why in news?

United Nations General Assembly unanimously approved the resolution sponsored by India to declare **2023 as the International Year of Millets**.

More on news

• In 2018, India had proposed to celebrate 2023 as International Year of Millets at Food and Agriculture Organization.

• Significance of declaring International Year of Millets.

o Help in raising awareness and direct policy action to nutritional and health benefits of millets consumption and their suitability for cultivation under adverse and changing climatic conditions.

o Draw focus for enhanced investments in research and development and extension services related to millets.

About Millets

• Millets are a group of small-seeded grasses, widely grown as cereal crops or grains for human food and as fodder.

• They are classified into Major Millets and Minor Millets based on their grain size.

Major millets	Minor millets	Psuedo millets
sorgum (jowar), pearl millet (bajra), finger millet(ragi).	foxtail, little, kodo, proso and barnyard millet	Amaranth (Rajgira) and Buckwheat (Kuttu). These are not part of the botanical family to which 'true' grains belong; however, they are nutritionally similar and used in similar ways to 'true' grains.

Millets in India

• India is the largest producer of millets in the world with a 41.0% global market share. India produced 11.5 million tonnes of millets in 2020.

• During 2017-18, the maximum area under millets was in Rajasthan, followed by Maharashtra and Karnataka.

• Major Millets grow in Kharif season (July to October): Pearl millet/bajra, finger millet/ragi (cereals), and jowar are kharif crops.

Benefits of Millets production-

Health benefits	Ecological benefits	Economic security
1. Aid in fighting malnutrition as they are rich in rich in fibre, minerals, vitamins and have more nutrient content. E.g., Finger millet has 839% calcium content of wheat and 3,440% that of rice. 2. They are Gluten-free which is advantageous for people suffering from diabetes . 3. They are anti-carcinogenic foods and anti-hypertensive and help prevent obesity and heart diseases . 4. Millets reduce inflammation and improves digestion.	• Millet crops sequester carbon from the atmosphere while paddy fields emit methane, a greenhouse gas. • Millets are less water intensive. E.g., One rice plant requires nearly 2.5 times the amount of water required by a single millet plant of most varieties. • They are hardy, drought-tolerant, and heat-resistant crops that generally do not succumb to pests and diseases. • Millets can grow in areas with less than 350 mm of rainfall and the cultivation cycle completed within 70-100 days. • They can grow on low fertility soil and many of them are also grown to reclaim soils.	• Millets are called 'Famine reserves' as they have a short growing season of 65 days and can keep well for two years or beyond. • Low investment needed for production as they do not require chemical fertilisers etc. E.g., Small millet grown in dry land districts of Karnataka, requires mere INR 5,000 per acre. • High demand for export: According to FAO, the global millet production was estimated at 28.4 million metric ton in 2019.

Challenges to millet production

a. Disproportionate focus on rice and wheat: As a fall out of green revolution the focus tilted towards the two staple but less nutritious crops. While almost a third of all major food grains in India constituted millets during 1950-51, this reduced to only around 15% by 2018-19. Also, area under millet declined from 37 million ha in 1965-66 to 14.72 million ha in 2016-17.
b. Lack of awareness: There is a lack of considerable knowledge of the value of millets among traditional communities. Earlier recognized as 'coarse grains', they are looked down upon as part of a poor person's diet.
c. Changes in dietary habits: Between the mid-1960s and 2010, an urban Indian's wheat consumption almost doubled, from 27 kg to 52 kg. At the same time average annual per capita consumption of sorghum and millets, reduced from 32.9 kg to 4.2 kg. Lack of ready-to-eat millet-based products has also led to decline in consumption.
d. Post-harvest treatment of millet: Millets need more processing than other crops, but the machines for these have not reached the farmer yet.
e. Low productivity: Most of the millets are grown in arid and semi-arid regions which are rainfall dependent.
f. Monoculture of ragi: Within millets, focus is on ragi as it is economically viable, increases soil fertility and can be intercropped. This results in less focus on another millets and risks agro-biodiversity.
g. Lower or near absence of production support, in terms of input supply and subsidy (seed and nutrients), irrigation support, and marketing support, and lack of modern technology when compared to the support enjoyed by other crops.

Government measures to promote millet production

• Initiative for Nutritional Security through Intensive Millet Promotion (INSIMP) was launched in 2011-12 to promote millets as "nutricereals' and enhance India's nutritional security. It is a part of Rashtriya Krishi Vikas Yojana.

• Integrated Cereals Development Programmes in Coarse Cereals under Macro Management of Agriculture scheme to increase the overall productivity under specific crop-based systems.

• Government allowed inclusion of "NutriCereals" in the Public

Distribution System (PDS) and mid-day meal scheme.

• Government is also continuously increasing the minimum support price (MSP) of millets (bajra, jowar, and ragi) substantially so as to incentivise farmers to grow millets especially in drought prone areas.

• Government has declared 2018 as National Year of Millets.

5) Nag River Pollution Abatement Project

In news

• The Nag River Pollution Abatement Project has been approved at a cost of Rs. 2,117.54 crores.

Key takeaways

• The project was approved under the National River Conservation Plan.

• It will be implemented by the National River Conservation Directorate (NRCD).

• It will reduce the pollution level in terms of untreated sewage, flowing solid waste and other impurities flowing into the Nag river and its tributaries.

Do you know?

• The Nag River is a river flowing through Nagpur, Maharashtra.

• The city derives its name from the Nag river

• Forming a part of the Kanhan-Pench river system, the Nag River originates in Lava hills near wadi.

6) Climate Action

Unless climate change is tagged as a primary culprit, climate action will continue to falter.

Himalayan Glacier Melt & Global Warming

- The melting of the Himalayan glaciers that prompted the floods and landslides in Uttarakhand have the fingerprints of global warming.
- Reduced Albedo: As glacier cover is replaced by water or land, the amount of light reflected decreases further aggravating warming of atmosphere Extreme Cold in Texas & Global Warming
- The extreme cold weather in Texas, is connected to Arctic-peninsula warming, at a rate almost twice the global average.

- Polar Vortex: Usually, there is a collection of winds around the Arctic keeping the cold locked far to the north. But global warming has caused gaps in these protective winds, allowing intensely cold air to move south — a phenomenon that is accelerating.

Concerns

i) India's Climate Vulnerability: While HSBC ranks India at the top among 67 nations in climate vulnerability (2018), Germanwatch ranks India fifth among 181 nations in terms of climate risks (2020). But public spending does not reflect these perils.

ii) Impact of accumulated Carbon: Even if major economies speed up climate mitigation, catastrophes like Uttarakhand will become more frequent due to the accumulated carbon emissions in the atmosphere.

iii) Diluting of climate safeguards: Studies had flagged ice loss across the Himalayas, and the dangers to densely populated catchments, but policy response has been lacking. Similarly, Kerala ignored a landmark study calling for regulation of mining, quarrying and dam construction in ecologically sensitive places, which contributed to the massive floods and landslides in 2018 and 2019.

Way Ahead

- ✓ Shift to Cleaner Energy Sources: Decisive switch is needed from highly polluting coal and petroleum to cleaner and renewable power sources.
- ✓ Need to announce Carbon Neutrality: India should announce a carbon neutrality target. China announced its Climate Neutrality targets in Oct 2020, likewise EU & Japan have also made announcements.
- ✓ Climate Budgeting: Explicitly including policies for climate mitigation in the government budget, along with energy, roads, health and education. Specifically, growth targets should include timelines for switching to cleaner energy.
- ✓ Climate Finance Mobilisation: The government needs to launch a major campaign to mobilise climate finance both from domestic and international sources. India's Central and State governments

must increase allocations for risk reduction, such as better defences against floods, or agricultural innovations to withstand droughts.

7) Gahirmatha Marine Sanctuary

In news

- A three-member panel constituted by the Orissa High Court made a field trip to the Gahirmatha marine sanctuary to assess the measures taken for the conservation of endangered olive ridley sea turtles.

Key takeaways

- According to an environment magazine's report, 800 olive ridley turtles died since January due to negligence of the States Forest and Fisheries department.
- The olive ridley turtles turn up in millions for mass nesting along the Odisha coast every year.
- Gahirmatha beach off Bay of Bengal coast in Odisha is acclaimed as the world's largest nesting ground of these turtles.

8) ICAR receives King Bhumibol World Soil Day - 2020 Award

In news

- Indian Council of Agricultural Research (ICAR) has received King Bhumibol World Soil Day - 2020 Award of FAO.
- ICAR received the award for its excellent contributions in "Soil Health Awareness" on the theme "Stop soil erosion, save our future" during 2020.

Important value additions King Bhumibol World Soil Day Award

- Launched in: 2018
- It acknowledges individuals or institutions that raise public awareness of soils
- Sponsored by: Kingdom of Thailand
- It is named after King Bhumibol Adulyadej of Thailand.

9) Seabuckthorn

Environment FOR You 2021

In news

The Himachal Pradesh government has decided to start planting seabuckthorn in the cold desert areas of the state.

Important value additions- Seabuckthorn

- It is a shrub which produces an orange-yellow coloured edible berry.
- In India, it is found above the tree line in the Himalayan region, generally in dry areas such as the cold deserts of Ladakh and Spiti.
- In Himachal Pradesh, it is locally called chharma.

Ecological, medicinal and economic benefits:

(1) Treating stomach, heart and skin problems;
(2) Its fruit and leaves are rich in vitamins, carotenoids and omega fatty acids;
(3) Helps troops in acclimatising to high-altitude;
(4) Important source of fuelwood and fodder;
(5) Prevents soil-erosion;
(6) Checks siltation in rivers;
(7) Helps preserve floral biodiversity;
(8) Used in making juices, jams, nutritional capsules etc.

10)Bamboosa Bambos likely to threaten Nilgiri biosphere

In news

The flowering of bamboo inside the Wayanad Wildlife Sanctuary (WWS) may pose a threat to wildlife in the Nilgiri biosphere, a major tiger and elephant habitat.

Key takeaways

- The bamboo groves in the Wayanad forest are the mainstay of herbivores in the Nilgiri biosphere during summer.
- With the onset of the summer, migration of wild animals starts from the adjacent sanctuaries in Karnataka and Tamil Nadu to Wayanad due to shortage of fodder and water.
- The flowering may adversely affect migration, especially by elephants, wild gaur, and other lower herbivores due to the mass destruction of bamboo groves after the flowering. Important value additions

- It is a tall, bright-green coloured spiny bamboo species, which grows in thickets consisting of a large number of heavily branched, closely growing culms.
- Bamboosa bambos is a monocarpic (flowering only once) plant.
- Family: Poaceae family (grass family).
- Its flowering cycle varies from 40 to 60 years.
- It is also known as the giant thorny bamboo, Indian thorny bamboo, spiny bamboo, or thorny bamboo.
- It is a species of clumping bamboo native to southern Asia.

11) Hidden Pandemic of Single Use Plastic Context:

Plastics have been deployed in great quantities as a shield against COVID. But little attention has been paid to where the increased plastic waste will end up COVID-19 and Single Use Plastic

- Ambitious Goal before COVID-19 Pandemic: In 2019, Union Government committed to completely phase out single-use plastics by 2022. The commitment called for better arrangements to collect, store, and recycle single-use plastic. The pandemic halted and, in some cases, reversed much of this progress.
- Plastic became ubiquitous in wake of COVID-19: Masks, sanitiser bottles, personal protective equipment, food packaging, water bottles- all used plastic.
- Concern over Microplastics: In time, this plastic will disintegrate into tiny particles of less than five millimetres — known as microplastics — and move through water bodies and farm soil to enter the food we eat and the air we breathe.
- Very Low Recycling: only 9 per cent of all plastic ever produced has been recycled, while 79 per cent of all plastic produced can be found in the world's landfills and in our air, water, soil, and other natural systems.
- Indispensability: Plastic is still important. Its central role in durable goods, medicine and food safety means that it is not practical to get rid of entirely. Instead, we must be more thoughtful about where, when and how we use it.

Way Ahead

- There are several steps we can take right now, even during the struggle against COVID-19, keeping in mind that above all we should avoid single-use plastics as much as possible.

- Increased Collection: We should ensure that waste collection operates at the same pace as waste generation.
- Segregation at early stage: we must be able to segregate waste and used plastic early in the waste-to-value cycle so that the plastic remains suitable for treatment and recycling. Some source segregation efforts became more normalised during the pandemic and this trend should continue. It will make recycling much easier and more economically viable.
- Encourage Environment Friendly alternatives: Government should promote alternatives to single-use plastics where they exist and develop alternatives where they do not exist. Business models that avoid plastic waste through alternative product delivery systems, promote circularity, and use plastic waste should be encouraged.
- Coordination amongst stakeholders: Considering that plastic pollution is a truly society-wide problem, it is important for government, businesses, and civil society to coordinate to find solutions.
- Policy Framework: Union government should come up with National Action Plan for Marine Litter and Plastic Pollution in Rivers for effective decision-making processes and actions at the national, regional and local level.

12)Digital Green Certificates by EU Context:

On March 17, 2021, the European Commission proposed to create a Digital Green Certificate to facilitate the safe and free movement of citizens within the European Union (EU) amid the COVID-19 pandemic.

The certificates are expected to be rolled out by the summer, after countries have had the time to set up the required digital infrastructure.

So, what exactly is the Digital Green Certificate?

1) No danger of COVID-19 transmission: A Digital Green Certificate is proof that a person has either been vaccinated against COVID-19, has received a negative test result or has recovered from COVID-19.
2) Digital Format & Free: The key features of the certificate are that it will be in digital or paper format complete with a QR code and will be free of charge.
3) Issuing Authorities: The certificate can be issued by authorities, including hospitals, testing centres and health authorities.

4) Lifting of restrictions in coordinated manner: Once the proposal for digital certificates is finalised, it will be accepted in all EU countries and will help to ensure that the restrictions imposed in different areas within the EU can be lifted in a coordinated manner.
5) Eligibility: All EU citizens or third-country nationals who are legally staying in the EU will be able to use these digital certificates and thereby will be exempted from free movement restrictions.
6) Notifying Commission: In case an EU member country requires a person to quarantine or undergo a test, it will have to notify the Commission and all other member states justifying its decision

What is the need for such a document?

- Waives free movement restrictions: In the EU and across the world, the tourism industry has been severely impacted due to the spread of the disease. Many countries have, therefore, been contemplating digital certificates or passports that will be proof that a person has been vaccinated or has recovered from COVID-19.
- Israel's Vaccine Passport Model: In February, Israel became the first country to issue certificates called "vaccine passports" that will allow vaccinated individuals to use some facilities and attend events.
- Global Practice: Denmark also said that it was in the process of rolling out digital passports that would act as proof for those individuals who have been vaccinated. Even so, as early as May 2020, countries such as Chile had proposed "release certificates" meant for those who had recovered from COVID-19 Concerns
- Stance of WHO: However, the World Health Organisation (WHO) had advised against using such certificates because of lack of evidence that a person infected with Covid-19 could not get the infection again.
- Possibility of re-infection: However, it is now known that re-infection in case of COVID-19 is rare. Research published in the journal Lancet recently points out that most people who have had COVID-19 are protected from re-infection for at least a period of six months. However, the study says that elderly patients are more prone to reinfections.

13) Launch of Climate Data Service Portal

In news

• Climate Data Services Portal of India Meteorological Department (IMD) was inaugurated on World Meteorological Day

• Ministry: Ministry of Earth Science

Key takeaways

• Developed by: IMD, Pune

• It has user-friendly platforms for climate data management and supply to the users

• It complements fully automated climate data management process

• The major components:

1. Real-Time monitoring of weather observations recorded by IMD Observatories.
2. Encapsulated IMD Metadata Portal, other reports and dashboards
3. Online access to meteorological data through Data Supply Portal.
4. Free download facility for Gridded Temperature and Rainfall Data of India.
5. Climatological Tables, Extremes and Normal.
6. Information on Monsoon Rainfall and Cyclone frequencies.
7. Data analytics and info graphics

14) AEG12 inhibits family of viruses

In news

• According to scientists at the US National Institutes of Health (NIH) and their collaborator, a mosquito protein, called AEG12, strongly inhibits the family of viruses that cause yellow fever, dengue, West Nile, and Zika, and also weakly inhibits coronaviruses,.

Key takeaways

1) The researchers found that AEG12 works by destabilising the viral envelope, breaking its protective covering.
2) The protein does not affect viruses that do not have an envelope.
3) At the molecular level, AEG12 rips out the lipids
4) The findings could lead to therapeutics against viruses that affect millions of people around the world.
5) While the researchers demonstrated that AEG12 was most effective against flaviviruses — the family of viruses to which Zika, West Nile, and others belong — they felt it is possible AEG12 could be effective against SARS-CoV-2.

6) But, it will take years of bioengineering to make AEG12 a viable therapy for Covid-19.

15) Himalayan Serow

In news

• Himalayan serow was spotted in the Manas Tiger Reserve in Assam recently

Important value additions

1) The Himalayan serow is a subspecies of the mainland serow native to the Himalayas.
2) Common name: Himalayan Serow
3) Scientific name: Capricornis sumatraensi thar.
4) Local name: Jingal, Yemu
5) It has an appearance of a goat with long, donkey like ears.
6) It has a habit of standing with forelegs making it an ungainly goat antelope.
7) Its coarse coat varies from black to red.
8) IUCN status: Vulnerable
9) It is listed in CITES Appendix I
10) It is listed under Schedule I of The Wildlife Protection Act, 1972, which provides absolute protection.
11) Previously assessed as 'near threatened', the Himalayan serow is now been categorised as 'vulnerable' in the IUCN Red List.

16) Hypnea Indica; Hypnea Bullata: Two new species of seaweed

In news

• Two new species of seaweed have been discovered by a group of marine biologists from Central University of Punjab, Bathinda.

Key takeaways

1) Named Hypnea indica (after India) and Hypnea bullata (because of the blisterlike marks on its body – bullate), the seaweeds are part of the genus Hypnea or red seaweeds.
2) Hypnea indica was discovered in Kanyakumari in Tamil Nadu, and Somnath Pathan and Sivrajpur in Gujarat.
3) Hypnea bullata was discovered from Kanyakumari and Diu island of Daman and Diu.

4) They grow in the intertidal regions of the coast, namely the area that is submerged during the high tide and exposed during low tides.
5) The genus Hypnea consists of calcareous, erect, branched red seaweeds.

17)Nacaduba Sinhala Ramaswamii Sadasivan

In news

• A group of lepidopterists have found a new butterfly species in India.

Key takeaways

1) The species is named Nacaduba sinhala ramaswamii Sadasivan,
2) It was discovered in the Agasthyamalais in the Western Ghats
3) The new taxon of Lycaenid butterflies belongs to the Nacaduba genus.
4) Line Blues are small butterflies belonging to the subfamily Lycaenidae.
5) Their distribution ranges from India and Sri Lanka to the whole of south-eastern Asia, Australia and Samoa.
6) It is the first time that a butterfly species was discovered by an all-Indian research team from the Western Ghats.

Do you know?

• Lepidopterology is a branch of entomology concerning the scientific study of moths and the three superfamilies of butterflies.

• Someone who studies in this field is a lepidopterist or an aurelian.

.

. .

Environment FOR You 2021