Prelim Bits 04-08-2022 | UPSC Daily Current Affairs

Ranganathittu Bird Sanctuary

The Ranganathittu Bird Sanctuary in Karnataka has been declared a Ramsar site underlining its status as a wetland of international importance.

> *Ranganathittu Bird Sanctuary is also the first and the only Ramsar site in Karnataka though India's tally of such sites stands at 64.*

- Also known as the Pakshi Kashi of Karnataka, Ranganathittu Bird Sanctuary is situated in Srirangapatna of Mandya district, Karnataka.
- It is located on the islands of river Cauvery. It is an example of riverine ecosystem.
- It is an Important Bird Area (IBA) that is identified by Birdlife International and Bombay Natural History Society (BNHS).
- It is declared a sanctuary in 1940 at the behest of the famous ornithologist Dr. Salim Ali
- **Climate** - There are no extremities of temperature at Ranganathittu Sanctuary.
- The temperature stays between the 23-29°C range for most parts of the year.
- In June, when the southwest monsoon peaks throughout Karnataka state, heavy to very heavy rainfall, accompanied by waterlogging and mild flooding, has been reported from the area.
- **Significance** - Ranganathittu bird sanctuary supports more than 1% of the world's population of spot-billed pelicans - as against a global population of nearly 17,000.
- Similarly, it supports a high population of painted storks and mugger crocodiles besides other species of fish.
- Therefore, the six islands and the water surrounding them would be part of Ramsar site.
- **Related Links** - Ramsar Sites

List of 10 new wetlands of India added to the Ramsar Sites list	
Koonthankulam Bird Sanctuary	Tamil Nadu
Gulf of Mannar Biosphere Reserve	
Vembannur Wetland Complex	
Vellode Bird Sanctuary	
Vedanthangal Bird Sanctuary	
Udhayamarthandapuram Bird Sanctuary	

Nanda Lake	Goa
Ranganathittu Bird Sanctuary	Karnataka
Sirpur Wetland	Madhya Pradesh
Satkosia Gorge	Odisha

Reference

1. https://www.thehindu.com/todays-paper/ranganathittu-is-now-a-ramsar-site/article65724186.ece
2. https://www.karnatakatourism.org/tour-item/ranganathittu-bird-sanctuary/
3. https://www.indiawildliferesorts.com/wildlife-sanctuaries/ranganathittu-sanctuary.html
4. https://www.hindustantimes.com/india-news/india-adds-10-new-wetlands-to-the-ramsar-sites-list-details-101659537969471.html
5. https://www.ndtv.com/india-news/with-10-new-protected-wetlands-india-equals-china-in-having-most-ramsar-sites-3221771

AlphaFold

Google-owned DeepMind, a company based in London, had predicted the 3D structures of more than 200 million proteins - entire protein universe known to scientists - using AlphaFold.

- AlphaFold is an **AI-based protein structure prediction tool** that is based on a computer system called deep neural network.
- AlphaFold is fed with protein sequences as input.
- When protein sequences enter through one end, the predicted 3D structures come out through the other.

Inspired by the human brain, neural networks use a large amount of input data and provides the desired output exactly like how a human brain would.

The real work is done by the black box between the input and the output layers, called the hidden networks.

- **Working** - AlphaFold uses processes based on “training, learning, retraining and relearning.”
- The first step uses the available structures of 1,70,000 proteins in the Protein Data Bank (PDB) to train the computer model.
- Then, it uses the results of that training to learn the structural predictions of proteins not in the PDB.
- Once that is done, it uses the high-accuracy predictions from the first step to retrain and relearn to gain higher accuracy of the earlier predictions.
- By using this method, AlphaFold has now predicted the structures of the entire 214 million unique protein sequences deposited in the Universal Protein Resource (UniProt) database.
- **Implications -** Proteins are the microscopic mechanisms that drive the behavior of

the human body and all other living things.
- Proteins carry out all the functions inside a living cell.
- Therefore, knowing protein structure and function is essential to understanding human diseases.
- Scientists predict protein structures using x-ray crystallography, nuclear magnetic resonance spectroscopy, or cryogenic electron microscopy.
- These techniques are time-consuming, and are based mainly on trial-and-error methods. These shortcomings are overcome by the AlphaFold.
- With this new release, the scientists behind DeepMind hope to speed up research into more obscure organisms and spark a new field called **metaproteomics**.

RoseTTaFold, developed by David Baker at the University of Washington, US, is another protein structure prediction tool. Although less accurate than AlphaFold, it can predict the structure of protein complexes.

Reference

1. https://indianexpress.com/article/technology/science/ai-predicts-the-shape-of-nearly-every-protein-known-to-science-8062024/
2. https://learningcorner.epaper.thehindu.com/article/65710890
3. https://www.forbes.com/sites/robtoews/2021/10/03/alphafold-is-the-most-important-achievement-in-ai-ever/?sh=2334791b6e0a

DESH Bill 2022

The government plans to table the Development of Enterprise and Service Hubs (DESH) Bill in the monsoon session of the Parliament, which will overhaul the Special Economic Zones (SEZ) Act of 2005.

- The DESH Bill will overhaul the existing SEZ law of 2005, aiming to revive interest in SEZs and develop **more inclusive economic hubs**.
- Through this, the government is seeking to go beyond export-oriented manufacturing and focus on broad-based parameters such as boosting additional economic activity, and integrating various industrial hubs.
- The new law will allow units to manufacture for both domestic and international markets.
- **Development Hubs** - Through this, the SEZs will be revamped and renamed Development Hubs.
- The developmental hubs will be classified into two types - Enterprise and services hubs.
    1. The enterprise hubs will have land-based area requirements and be allowed for both manufacturing and services activities.
    2. The services hubs will have built-up area requirements and be allowed for only services-related activities.
- These hubs, which will come up under the regional boards of states, could be created by Centre or states or jointly by both or by any goods and services provider.

- These hubs will be free from several laws that currently restrict them.
- These hubs will facilitate both export-oriented and domestic investment.
- **Criteria** - Evaluation based on net foreign exchange and direct tax incentives have been done away with in order to comply with WTO rules.
- Under the DESH Bill, net positive growth criteria will be used to judge performance.
- **Duty and Tax** - The customs duty would only be paid on the inputs used and not on the expensive final goods.
- An equalisation levy may be imposed on goods or services supplied to the domestic market to bring taxes at par with those provided by units outside.
- **Significance** - One of the key aspects of the new DESH Bill is also to promote the expansion of the gambit of service sector units.
- Currently, only specified services such as IT, ITeS are allowed in special economic zones.

The new DESH Bill will be WTO-compliant and will have a single window clearance system.

Shortcomings of the SEZ Act

- According to the WTO's dispute settlement panel, India's export-related schemes, including the SEZ Scheme, were inconsistent with WTO rules since they directly linked tax benefits to exports.
- In its report in 2019, the WTO's dispute settlement panel ruled that India's export-related schemes were in the nature of prohibited subsidies under the Agreement on Subsidies and Countervailing Measures.
- The SEZ Act was implemented in 2006 in a bid to create export hubs and boost manufacturing in the country.
- However, these zones started losing their sheen after the imposition of a minimum alternate tax and the introduction of a sunset clause for the removal of tax incentives.

Reference

1. https://www.business-standard.com/podcast/economy-policy/what-is-the-desh-bill-122072700076_html
2. https://www.news18.com/news/explainers/house-talk-what-the-desh-bill-sez-about-boosting-indias-manufacturing-might-meeting-wto-standards-5615791.html
3. https://www.financialexpress.com/industry/will-the-newly-proposed-desh-bill-change-the-sez-landscape-of-india/2600045/

Diammonium Phosphate

As part of the Atma Nirbhar Bharat initiative, the Government of India has been supporting the Indian fertiliser companies including those producing Diammonium Phosphate to strengthen their backend supply chain.

- Di-ammonium Phosphate (DAP) [$(NH4)_2HPO_4$] is the world's most widely used **phosphorus fertilizers**.

- It is a preferred fertilizer in India because it contains both **Nitrogen** (18% N) and **Phosphorus** [46% P2O5 (20% P)] that are primary macronutrients and part of 18 essential plant nutrients.
- DAP is manufactured by reacting Ammonia with Phosphoric acid under controlled conditions in fertilizer plants.
- **Uses** - DAP is an excellent source of **P and N for plant nutrition**.
- It is highly soluble and thus dissolves quickly in soil to release plant-available phosphate and ammonium.
- To prevent the possibility of seedling damage, care should be taken to avoid placing high concentrations of DAP near germinating seeds.
- DAP is used in many applications as a **fire retardant** to prevent a forest from burning. It then becomes a nutrient source after the danger of fire has passed.
- DAP is used in various industrial processes, such as metal finishing.
- It is commonly added to wine to sustain yeast fermentation and to cheese to support cheese cultures

India is the largest agricultural consumer of DAP in the world.

Reference

1. https://pib.gov.in/PressReleasePage.aspx?PRID=1847976
2. https://www.kribhco.net/dap.html#:~:text=Efficient%20Use%20Properties-,Di%2Dammonium%20Phosphate%20popularly%20known%20as%20DAP%20is%20a%20preferred,%25%20Phosphorus%20(P2O5)..
3. https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/diammonium-phosphate
4. http://www.ipni.net/publication/nss.nsf/0/66D92CC07C016FA7852579AF00766CBD/$FILE/NSS-17%20Diammonium%20Phosphate.pdf

Energy Conservation (Amendment) Bill 2022

The government introduced the Energy Conservation (Amendment) Bill, 2022 in the Lok Sabha.

- The Bill 2022 seeks to amend the Energy Conservation Act, 2001.
- The Bill will help meeting the five targets announced by Indian Prime Minister at UNFCCC COP26 (Glasgow) in 2021.
- The main objective of the proposed amendments is to reduce India's power consumption via fossil fuels and thereby minimize the nation's carbon footprint.
- The Bill seeks to mandate **minimum use of non-fossil sources**, including Green Hydrogen, Green Ammonia, Biomass and Ethanol for energy and feedstock.
- It also seeks to establish **carbon credit trading markets** in order to incentivise the private sector for emission reduction.
- Under the Carbon trading scheme for reduction of carbon emissions, certificates will be issued to those who meet their emission targets.
- These certificates can then be traded with those unable to meet their emission targets.

- This carbon trading scheme will subsume all present tradeable green and white tags.
- The Bill seeks to make large residential buildings comply mandatorily with the energy efficiency code.
- Currently, only commercial buildings are required to follow the energy efficiency code.
- Other Provisions under the Bill
    1. Enhance the scope of Energy Conservation Building Code;
    2. Amend penalty provisions,
    3. Strengthening institutions set up originally under the Act, such as the Bureau of Energy Efficiency,
    4. Empower the State Electricity Regulatory Commissions to make regulations for smooth discharge of its functions.
- **Related Links** - India's five-point Climate Action Plan

Reference

1. https://www.business-standard.com/article/economy-policy/amended-energy-conservation-bill-seeks-to-build-carbon-credit-market-122080301614_html
2. https://economictimes.indiatimes.com/news/india/energy-conservation-amendment-bill-in-lok-sabha/articleshow/93331584.cms
3. https://www.thehindu.com/sci-tech/energy-and-environment/explained-what-is-the-energy-conservation-amendment-bill-2022-how-will-it-help-india-meet-its-climate-targets/article65653161.ece