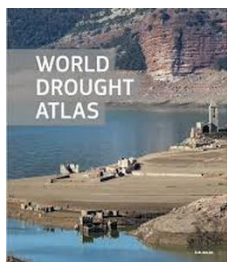


Current Affairs - 05 December 2024

WORLD DROUGHT ATLAS

According to the World Drought Atlas around 75 per cent of the population will be affected by drought by 2050.



- It has been launched by the **United Nations Convention to Combat Desertification (UNCCD)** in collaboration with **European Commission Joint Research Centre**.
- It explains how worsening **drought risks are linked to human activities** and then delves into the impacts of drought in five key areas—water supply, agriculture, hydropower, inland navigation, and ecosystems.
- It features 21 case studies from around the world, underscoring that no country is immune to drought and all can better prepare for it.
- It describes concrete measures and pathways to **manage, reduce, and adapt to systemic drought risks**; underscores the co-benefits of these actions for different sectors; and showcases best practices from different regions.
- The measures highlighted in the Atlas fall into three categories:
- **Governance** (e.g. early warning systems, microinsurance for smallholder farmers, pricing schemes for water usage);
- **Land-use management** (e.g. land restoration and agroforestry);
- **Management of water supply and use** (e.g. wastewater reuse, managed groundwater recharge and conservation.)



GHARCHOLAS SAREE

Recently, Gujarat's 'Gharcholas' receive Geographical Indication tag.

Current Affairs - 05 December 2024

- It is also known as **Ghatchola** and **Gharcholu** which has finest bandhani work of Gujarat
- It is traditionally been used for years in **Gujarati weddings**.
- The name 'Gharchola' means '**Outfit for Home**', which symbolizes a newly wedded bride joining her new home.

Features:

- It is **woven on Cotton or Silk fabric** in large checks of using Silk and Zari threads.
- This is further colored in **Bandhani or tie & dye technique**. These checkered patterns are filled with small golden motifs of peacocks, lotus, human figures, and floral designs.
- These are traditionally crafted in auspicious **colours such as red, maroon, green, and yellow**, which hold special significance in Hindu customs.
- A Gharchola Saree with 12 squares is known as '**Bar Bagh**', while the one with 52 squares is known as '**Bavan Bagh**'.
- The designs often incorporate **symbols of fertility and prosperity**, such as the kalash and the paan.
- In recent time **weavers are infusing modern designs** and techniques into their gharcholas, blending tradition with contemporary appeal.
- This is the **27th GI tag** that **Gujarat** has received.

SVAGRIHA RATING



Recently, the Inland Waterways Authority of India's Intermodal Terminal (IMT) at Kalughat in Bihar has received five-star SVAGRIHA rating from GRIHA council.

- SVAGRIHA rating that stands for **Simple Versatile Affordable GRIHA** – supports the concept of green buildings and sustainability under **Green Rating for Integrated Habitat Assessment (GRIHA)**.

Current Affairs - 05 December 2024

It is a **guidance-cum-rating system** being developed for small stand-alone buildings like residences, commercial offices, motels, dispensaries, schools etc.

- It has been developed in order to help reduce the environmental impact of these small developments.

Rating system:

- It will be **applicable only for projects** which are **less than 2500 sq.m. built-up area**.
- The rating system **has 14 criteria**.

Criteria: The **criteria** are divided into **5 broad sub-groups** namely: **architecture & energy, water & waste, materials, landscape and lifestyle**.

It will be mandatory to attempt certain points under each sub-group. The total points that a project can **achieve are 50**.

- The rating will be done on a **1–5-star scale**.
- It has been designed as a simple online tool with guiding parameters which will evaluate the performance of the project with respect to SVAGRIHA in a simple, easy to understand manner.

Kalughat Intermodal Terminal:

- It is one among several infrastructural interventions made by Inland Waterways Authority of India (IWAI) for capacity augmentation of **National Waterway 1 – River Ganga**.
- It has received the five-star rating for its efforts to for **environmental sustainability** by ensuring **usage of recyclable materials** like fibre, recyclable glasses, paint, sanitary fixtures etc during the building of the terminal.

Current Affairs - 05 December 2024

WHAT ARE NANOBUBBLES?



The Union Minister of State for Forest, Environment, and Climate Change recently launched 'Nano Bubble Technology' for cleaning and purifying the water of the National Zoological Park, Delhi, to promote the health of aquatic animals.

- These are **70-120 nanometers in size**, 2500 times smaller than a single grain of salt.
- They can be **formed using any gas and injected into any liquid**.
- They have unique physical and chemical properties and are **superior to other aeration methods**.
- Therefore, nanobubble technology is used in a **variety of applications**, including **water treatment, agriculture, aquaculture, food processing**, and other industrial areas.

Properties:

- **Large Surface Area:** Nanobubbles have a high surface area to volume ratio, allowing for a **greater amount of gas to be in contact with water**. This, combined with their ability to remain suspended in water due to their small size and high buoyancy, results in **increased gas transfer efficiency** between the gas and water phases.
- **Homogenous distribution:** Nanobubbles **stay in the water for a long time**. This unique feature **enables nanobubbles to provide a homogenous distribution of oxygen throughout an entire body of water** and dissolved oxygen levels are maintained for a very long time.
- **High Oxygen Transfer Efficiency:** Nanobubbles can efficiently deliver oxygen into water **due to the very large surface area and their Brownian motion**. Oxygen transfer **efficiency** with nanobubbles is reached to **around 90%**.
- **Surface charge:** Nanobubbles have a **strong negative surface charge**. This negative charge **improves separation efficiency** in the floating process.

Current Affairs - 05 December 2024

- **Benefits:** Due to the various inherent physical properties of nanobubbles, the ability to transfer gas to liquid is very high, and thus has the following advantages:
- **Improved Water Treatment:** Nanobubbles can effectively remove organic pollutants, bacteria, and other contaminants from water.
- **More Efficient Cleaning:** Nanobubbles can penetrate surface pores and crevices, providing a more thorough cleaning that is effective against stubborn dirt and grime.
- **Enhanced Agriculture and Aquaculture:** Supplying oxygen nanobubbles to plants and aquatic organisms can improve their growth, health, and resilience.
- Nanobubbles can also enhance nutrient absorption, reduce the need for pesticides and other chemicals, and improve crop yields.
- **Enhanced Oil and Gas Recovery:** Nanobubbles can increase the efficiency of oil and gas recovery by improving the flow of fluids and reducing the amount of chemicals needed in the process.
- **Improved Skin and Hair Health:** Nanobubbles can help enhance the absorption of skincare products, leading to healthier skin.

WINDFALL GAINS TAX ON OIL PRODUCTION, DIESEL-PETROL EXPORT REMOVED

Recently, the government officially withdrew the windfall gains tax on domestic crude oil production and fuel exports (diesel, petrol, and ATF).

The levy, introduced 30 months ago during a surge in international crude oil and fuel prices following Russia's invasion of Ukraine, aimed to address global energy turmoil and ensure domestic fuel availability.

Windfall tax

- Windfall taxes are designed to tax the profits a company derives from an external, sometimes unprecedented event—for instance, the energy price-rise as a result of the Russia-Ukraine conflict.

Current Affairs - 05 December 2024

- The United States Congressional Research Service defines a windfall as an unearned, unanticipated gain in income through no additional effort or expense.
- These are profits that cannot be attributed to something the firm actively did, like an investment strategy or an expansion of business.
- Governments typically levy a one-off tax retrospectively over and above the normal rates of tax on such profits, called windfall tax.
- **Rationale behind levying this tax**
 - Redistribution of unexpected gains when high prices benefit producers at the expense of consumers,
 - To fund social welfare schemes, and
 - As a supplementary revenue stream for the government,
 - As a way for the Centre to narrow the country's widened trade deficit.

Criticism

- **Brings uncertainty in the market**
 - Since windfall taxes are imposed retrospectively and are often influenced by unexpected events, they can brew uncertainty in the market about future taxes.
 - This may affect the future investment in the related sectors.
- **Populist in nature**
 - Many analysts believe that such taxes are populist and politically opportune in the short term.
 - The IMF advice note also said that taxes in response to price surges may suffer from design problems—given their expedited and political nature.
- **Profits earned in such instances are reward for the risk taken**
 - Companies argue that it is the profit they earned as a reward for the industry's risk-taking to provide the end user with the petroleum product.

Current Affairs - 05 December 2024

- **Who should be taxed is another issue**
 - Another issue is who should be taxed- only the big companies responsible for the bulk of high-priced sales or smaller companies as well.
 - This raises the question of whether producers with revenues or profits below a certain threshold should be exempt.

Withdrawal of windfall gains tax

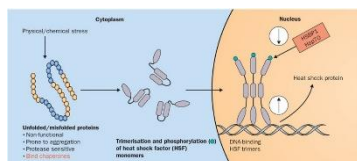
- **Background - Introduction of Windfall Gains Tax**
 - It was introduced on July 1, 2022, amid a surge in crude oil and fuel prices caused by Russia's invasion of Ukraine.
 - It was aimed to address concerns about fuel availability in the domestic market during the global energy turmoil.
 - Apprehensions about the availability of the fuels in the domestic market amid the global energy turmoil at the time also contributed to the decision to impose the levy.
- **Windfall gains tax removed**
 - On December 2, 2024, the govt withdrew the windfall gains tax on domestic production of crude oil and export of diesel, petrol, and aviation turbine fuel (ATF).
 - Decision reflects current global oil market stability and diminished likelihood of another supply shock.
- **Reasons for Withdrawal**
 - **Global Stabilisation:**
 - Oil and fuel prices significantly reduced (from over \$100 to under \$75 per barrel).
 - Supply flows stabilised after initial shocks.
 - **Domestic Market Conditions:**
 - Robust fuel availability in the domestic market.

Current Affairs - 05 December 2024

- Declining revenue from the tax due to market adjustments.
- **Scrapping the levy: Impact and signal**
 - **Opposition to the Windfall Tax**
 - The oil industry opposed the tax, citing reduced profitability for publicly listed companies and a discouraging environment for increasing oil production.
 - Frequent changes in levies created unpredictability in taxation, deterring investments in a country heavily reliant on oil imports (85% dependency).
 - **Decline in Revenue Collection**
 - Significant softening of international crude oil and fuel prices had reduced windfall gains tax revenues:
 - FY23: Rs 25,000 crore.
 - FY24: Rs 13,000 crore.
 - FY25 (so far): Rs 6,000 crore.
 - **Impact on Key Stakeholders**
 - No significant financial impact on domestic producers (ONGC, OIL) or major exporters (Reliance Industries, Nayara Energy).
 - Signals confidence in market stability and reduced risks of price surges or supply shocks.

HEAT SHOCK PROTEIN 70 (HSP70)

The team from JNU's Special Centre for Molecular Medicine, identified a human protein, Hsp70, as a critical factor in the spread of diseases like malaria and Covid-19.



- Hsp70 is a type of **molecular chaperone**, a protein that plays a vital role in helping other proteins fold into their proper shapes and preventing misfolding.

Current Affairs - 05 December 2024

- It plays a crucial role in regulating protein synthesis and protecting proteins from stress.
- It becomes elevated during times of cellular stress and they help to shield cells from further insults.
- **Role in human body:** It plays an important role in protein folding, preventing protein aggregation and transport of proteins across membranes. It is crucial for protein homeostasis and cell survival.

Highlights of the research:

- The team of researchers discovered that **Hsp70 interacts with the spike protein** of SARS-CoV-2—the virus responsible for Covid-19—and human ACE2 receptors, which the virus uses to enter cells.
 - They hypothesized that during fever, Hsp70 levels rise and help stabilise this interaction, making it easier for the virus to infect cells. By inhibiting Hsp70, the researchers successfully blocked viral replication in lab tests.
 - The research suggests that targeting Hsp70 **might help prevent drug resistance**, a growing problem in treating infections.
-