

ENVIRONMENT

❖ **WWF's diet chart to help curb climate change**

❖ **Context: On World Food Day, World Wide Fund for Nature (WWF) outlines sustainable diet plan that's healthy for humans & environment alike**

- WWF outlined a sustainable diet plan that can help address a host of environmental challenges while also providing health benefits.
- Our global food system is one of the primary drivers of biodiversity loss, with agriculture alone being the identified threat to 22,500 of the 41,000 species at risk of extinction.
- Emissions burden from the world's food production is also massive: A quarter of global greenhouse gas emissions are associated with food.

❖ **WWF's recommendations:**

- Wasting less food, looking out for eco-labels and following a more diverse diet can go a long way, the organisation suggested.
 - It encouraged the following consumption patterns:
 - Plant-heavy diet: Growing plants requires less water and land and emits lower volumes of greenhouse gases than meat, dairy and egg production. Incorporating more fruits, vegetables and wholegrains in our diet can reduce the impact our food system has on the environment.
 - Diversify the platter: Seventy-five percent of the global food supply comes from only 12 plant and five animal species. The global dependence on a small range of food threatens the diversity of species in agriculture, weakens our food systems and is also not the most nutritious.
 - Cut food waste: Planning meals, shopping smart and more efficient storage of food items can help reduce food waste. Nearly 570 million tonnes of the global food waste occurs at the household level.
 - Proteins beyond meat: Around 60 per cent of the greenhouse gas emission from agriculture is due to animal farming. Consuming more mushrooms, peas, beans and nuts to meet our protein requirements can help reduce this burden.
 - Pay attention to logos: The organisation listed out some logos one can look for while grocery shopping.
 - These include: Organic, Rainforest Alliance (for sustainable agriculture), Fairtrade (protecting farmers and workers in developing countries), Freedom Food (animal welfare), MSC and ASC (Marine Stewardship Council and Aquaculture Stewardship Council, for seafood) and RSPO (Roundtable for Sustainable Palm Oil).
 - Avoid fat, sugar, salt: Cultivation of sugarcane and sugar beet causes soil erosion and is often associated with intensive use of water and pesticides. New sugar plantations are replacing natural habitats, leading to biodiversity decline.
- ❖ **Advantages of the above diet plan**
- The advantages of such a global shift towards the above diet are:
 - combating climate change and food insecurity,
 - reducing biodiversity loss,
 - improving human health,
 - significantly reducing premature mortality
 - helping decrease the risks of future pandemics.

PRELIMS

1. Gaur (Indian Bisons)

❖ **Context: The Indian government is considering a proposal from Colombo to export a number of gaurs, or Indian bisons.**

- It aims to revive the population of gavaras that have been extinct in Sri Lanka since the end of the 17th century.
- If the project is cleared, it would be the first such agreement between India and Sri Lanka, and part of a global trend of wildlife or zoological diplomacy.

❖ **Gaur**

- The Gaur also known as the Indian bison, is a bovine native to South Asia and Southeast Asia.
- The global has declined by more than 70% during the last three generations, and is extirpated from Sri Lanka and most likely Bangladesh.
- It is the largest species among the wild cattle and the Bovidae.
- The domesticated form of the gaur is called gayal (*Bos frontalis*) or mithun.
- The gaur is the mascot of the 54th Infantry Division of the Indian Army, which is also called the Bison Division.
- The gaur is the state animal of Goa and Bihar.
- **Distribution** : Continents – Asia , Subcontinents - Southeast Asia, East Asia, South Asia, Countries - Bhutan, Cambodia, China, India, Laos, Malaysia, Myanmar, Nepal, Thailand, Vietnam, Bangladesh , Biogeographical realms – Indomalayan, Biomes - Tropical dry forest, Tropical moist forests

- **Threats:** Loss of habitat throughout most of their range, Susceptibility to domestic cattle diseases like rinderpest, hoof, or mouth disease, Attracts hunters for its horns and is hunted for sport.
- **Conservation status:** It has been listed as Vulnerable on the IUCN Red List since 1986. The gaur is listed in CITES Appendix I, and is legally protected in all range states. Schedule I species under the Wildlife Protection Act, 1972.

2. Attention-deficit hyperactivity disorder (ADHD)

❖ Context: The US Food and Drug Administration (FDA) recently announced a shortage of Adderall, medication used to treat attention-deficit hyperactivity disorder (ADHD)

- ADHD is one of the most common neurodevelopmental disorders of childhood.
- It is usually first diagnosed in childhood and often lasts into adulthood.
- Children with ADHD may have trouble: paying attention, controlling impulsive behaviors (may act without thinking about what the result will be), or be overly active.
- A child with ADHD might: daydream a lot, forget or lose things a lot, squirm or fidget, talk too much, make careless mistakes or take unnecessary risks, have a hard time resisting temptation, have trouble taking turns, have difficulty getting along with others

❖ Types

- Predominantly Inattentive Presentation
- Predominantly Hyperactive-Impulsive Presentation
- Combined Presentation

❖ Causes of ADHD

- Genetic factors, Brain injury, Exposure to environmental risks (e.g., lead) during pregnancy or at a young age, Alcohol and tobacco use during pregnancy, Premature delivery, Low birth weight

❖ Adderall and its treatment for ADHD

- In most cases, ADHD is best treated with a combination of behavior therapy and medication.
- Adderall is the brand name for the formulation that consists of a combination of dextroamphetamine and amphetamine.
- It is an FDA-approved drug for the treatment of ADHD and narcolepsy, a sleep condition that causes daytime sleepiness.
- Adderall belongs to the class of drugs known as stimulants and increases the levels of dopamine and norepinephrine in the brain.
- For people diagnosed with ADHD, Adderall can help improve focus, concentration, impulse control and hyperactivity, because of its effects on the central nervous system.
- Over the past decade, there have been many reports about the growing use and misuses of stimulants like Adderall among students and athletes, who might find enhanced cognition or sports performance.

3. Green investments

❖ Context: With the world increasingly facing natural disasters, many institutional investors consider climate as an important factor when taking investment decisions.

❖ What is climate risk and importance of ESGs?

- Climate risk refers to the significant changes in climate that can have adverse economic implications.
- Companies causing adverse impact on climate can have negative implications on financial performance.
- On the positive side, companies that adopt clean technologies could be rewarded by the investors.
- This is broadly true for firms embracing Environment, Social and Governance (ESG) factors.
- Environmental, social, and governance (ESG) investing refers to a set of standards for a company's behavior used by investors to screen potential investments.
- Environmental criteria consider how a company safeguards the environment, including corporate policies addressing climate change, for example.
- Social criteria examine how it manages relationships with employees, suppliers, customers, and the communities where it operates.
- Governance deals with a company's leadership, executive pay, audits, internal controls, and shareholder rights.
- The developed world has vowed to bring greenhouse gas (GHG) emissions to sustainable levels by 2050 to prevent irreversible damage to the environment.
- Financial markets could consistently assign higher valuations to companies that maintain high level of ESG compliance.
- One can consider investments in such firms through ESG-dedicated equity funds.
- These are funds that invest in companies forming part of an ESG Index.

- NSE, for instance, has the Nifty100 ESG Index which reflects the performance of companies in the Nifty 100 Index with weights based on ESG scores.
- ❖ **What is Green Investments?**
- The term “green investments” refers to investment activities that are focused on projects or companies that are committed to the preservation of natural resources.
- This can range from companies that are developing alternative energy technology to companies that have the best environmental practices.
- Green investing can also be achieved through exchange-traded funds (ETFs), which mimic the stock indexes made up of green companies.
- Some of the initiatives for natural resource conservation include the production of alternative energy sources, the execution of projects pertaining to clean air and water or other such benevolent activities.
- Green investment is one of the types of socially responsible investment.
- Funds for green investment can be raised by corporations, private equity firms, hedge funds as well as individuals.
- Typically these funds are raised in the form of securities, mutual funds (MFs), electronically traded funds(ETFs) and bonds

4. Legacy landfills

❖ **Context: The remediation of all legacy landfills in the country are in full swing and a public dashboard on the progress at 2,200 such sites is in the offing.**

- Launched on October 1, 2021 the swaccha bharat mission aims at making all cities “garbage-free” by the end of its five-year period.
- Action plans for 1,000 legacy landfill sites had been approved by the Ministry of Housing and Urban affairs.
- While landfills were only supposed to contain the remnants of solid waste after processing, the segregation and management were not carried out over the years, leaving mountains of trash.
- Any waste that has remained dumped for over three months is considered “legacy.”
- The online dashboard would contain the exact number, size and remediation plans of the sites, which are estimated to be around 2,200. These sizeable landfills each contain at least 1,000 tonnes of waste.
- Through the portal, citizens would be able to track the progress of their cities’ action plans for remediation of legacy landfills. The plans cover everything from remediation to the eventual reuse of the land.

❖ **What are legacy wastes?**

- Legacy wastes are the wastes that have been collected and kept for years at a landfill or some barren land.
- Legacy waste can be categorized into:
 - Contained and/or stored waste(wastes in tanks, canisters, and stainless steel bins)
 - Buried waste
 - Contaminated soil and groundwater
 - Contaminated building materials and structures

❖ **What is the environmental impact of such waste?**

- Occupy large space
- Become a breeding ground for pathogens, flies, malodours and generation of leachate, which may lead to water contamination
- Contribute to generation of greenhouse gases
- Pose risk of uncontrollable fire

5. Aluminum Freight Rake - 61 BOBRNALHSM1

❖ **CONTEXT: Union Minister for Railways, Communications and Electronics & Information Technology, Shri Ashwini Vaishnaw inaugurated India’s First Aluminum Freight Rake - 61 BOBRNALHSM1 at Bhubaneswar Railway Station. The rake’s destination is Bilaspur.**

- This is a dedicated effort for Make in India program as it has been fully designed and developed indigenously in collaboration with RDSO, HINDALCO and Besco Wagon.

❖ **Features of Aluminium Rake:**

- Fully Lockbolted construction with no welding on superstructure.
- The tare is 3.25 tons lower than normal steel rakes, 180 ton extra carrying capacity resulting in higher throughput per wagon.
- Higher payload to tare ratio 2.85.

BOBRNHS – Steel		BOBRNALHSM1	
Tare Weight (Estimated)	25.61 t	Tare Weight (Estimated)	23.54 t
Gross Weight of a wagon	89.28 t	Gross Weight of a wagon	87.28 t
Load Capacity	63.67 t	Load Capacity	63.74 t
Axle Load (Loaded)	22.32 t	Axle Load (Loaded)	21.82 t
Axle Load (Empty)	6.40 t	Axle Load (Empty)	5.885 t

- The reduced tare will reduce carbon footprint as lower consumption of fuel in empty direction and more transport of freight in loaded condition. A single rake can save over 14,500 tonnes of CO2 over its lifetime.
- 80% is resale value of the rakes.
- Cost is 35% higher as the superstructure is all aluminium.
- Lower maintenance cost due to higher corrosion and abrasion resistance.
- Iron industry consumes a lot of Nickel and Cadmium which comes from import. So, proliferation of Aluminum wagons will result in less import. At the same time, this is good for local aluminum industry.

6. Six varieties of neelakurinji identified in Santhanpara region of Western Ghats

❖ **CONTEXT:** Recently, a team of Experts has observed six varieties of Neelakurinji in the the Western Ghats which indicated the need to conserve the ecosystem for them and their habitat.

- Neelakurinji is flowers that are believed to bloom every 12 years.
- They grow at an altitude of 1300 to 2400 meters.
- Neelakurinji or 'Strobilanthes kunthiana' blooms in 40 or so varieties, a majority of them being blue in color.
- 'Neela' literally translates to 'blue' and kurinji is the name given to it by the tribals of the area.
- Last seen in 2018, the time for viewing them begins in August and lasts up to October.
- In Munnar District, these flowers bloom across the region of Kovilur, Kadavari, Rajamala, and Eravikulam National Park.
- Alongside Strobilanthes kunthiana, the types of neelakurinji flowers that have been identified from the hill ranges include; Strobilanthes anamallaica, Strobilanthes heyneanus, Strobilanthes pulnyensis, and Strobilanthes neoasper.
- All these neelakurinji species are endemic to the Western Ghats and spread over nearly 200 acres of the Kallippara hills.
- In fact, the neelakurinji population here can be considered one of the biggest of the species after the protected areas of Munnar.

Significance:

- The first settlers of Kodaikanal hills, the Paliyan and Puliyan tribes are believed to have used the Neelakurinji blooming cycle to calculate their age. With every new bloom, the members of the tribe added 12 years to their age.
- Kurinji flower is used to describe the associated mountainous landscape where it blooms in Sangam Literature classical Tamil literature.

7. Sprut-SDM1 light amphibious tank

❖ **CONTEXT:** Russia joins the race to supply light battle tanks to the Indian Army, will field its Sprut-SDM1 light amphibious tank for the Indian Army's upcoming tender for light tanks.

- The project has received in-principle approval and is planned to be procured under the 'Make-I' acquisition category of the Defence Acquisition Procedure (DAP)-2020. 'Make-I' refers to government-funded projects while 'Make-II' covers industry-funded programs. Make-I was involved in the development of big-ticket platforms such as light tanks and communication equipment with Indian security protocols.
- It's manufacturer company Tractor Plants Concern
- It is a three Crew tank with length 08m, maximum Amphibious Speed is 7km/h and maximum Road Speed 70km/h with maximum Range 500km
- ❖ **Armament and protection feature of Sprut-SDM1:**
 - The primary armament of the tank is a 125mm gun fitted to the remote-controlled weapon station.
 - The secondary armament of the tank consists of a 7.62mm machine gun and a 7.62mm coaxial machine gun.
 - Guided missile weapon system: To defeat explosive reactive armour (ERA)-equipped targets and armoured fighting vehicles at ranges up to 5km.
 - Protection of the onboard crew from nuclear, biological, and chemical (NBC) threats.

- Fire control system: A next-generation digital fire control system (FCS) is integrated into the amphibious vehicle.
- Hydro-pneumatic type suspension system: It offers improved driving comfort over all types of terrain.
- ❖ **Other Capabilities:**
- Cross water obstacles and fire its gun while afloat
- Disembark from a ship
- Operate in high mountains in conditions of thin air, at very high and low temperatures.
- Need for light tank is crucial after a standoff with China in eastern Ladakh, the Indian Army is prioritizing the procurement of a light tank, named 'Zorawar', for deployment in the mountains. The army had issued a Request for Information (RFI) for the procurement of 350 light tanks weighing less than 25 tonnes in a phased manner.

ANSWER WRITING

Q. Describe the characteristics and types of primary rocks.

Igneous rocks are called primary rocks because they are the first one to be formed in the rock cycle and they do not leave any organic remains. They form when hot, molten rock crystallizes and solidifies.

Depending upon where the molten rock solidifies, they can be divided into two types:

- **Intrusive Igneous Rocks:** They form when magma is trapped deep inside the Earth where it cools very slowly over many thousands or millions of years until it solidifies. Slow cooling means the individual mineral grains have a very long time to grow, so they grow to a relatively large size. These rocks have a coarse-grained texture. Example - Diabase, Granite, Pegmatite and Peridotite.
- **Extrusive Igneous Rocks:** They are produced when magma exits and cools above (or very near) the Earth's surface. These rocks form at erupting volcanoes, so molten rock erupts on the surface, the magma cools and solidifies almost instantly when it is exposed to the relatively cool temperature of the atmosphere. Quick cooling means that mineral crystals don't have much time to grow, so these rocks have a very fine-grained or even glassy texture. Hot gas bubbles are often trapped in the quenched lava, forming a bubbly, vesicular texture. Example - Basalt, Pumice, Obsidian and Andesite.

MCQs

- Consider the following statements about Indian gaur:
 - Gaurs are the world's largest and tallest wild bovines, with 85% of their current population found in India.
 - The Indian Gaur is listed as Schedule I species under the Wildlife Protection Act, 1972.
 - The first population estimation exercise of the Indian Gaur (Bison) was carried out in the Nilgiris Forest Division.
 - It is tagged as 'Critically Endangered' on the International Union for Conservation of Nature's (IUCN) Red List.

Which of the statements given above is/are correct?

a) 1, 2 and 3 only b) 2, 3 and 4 only
c) 1 and 4 only d) 1, 2 and 4
- With reference to India's defence, consider the following helicopters:
 - Cheetah
 - Chetak
 - Rudra

Which of the above has/have turret gun, rocket system and air-to-air missile?

a) 1 and 2 b) 2 only
c) 1 and 3 d) 3 only
- With reference to Arjun Mk-1A main battle tanks (MBT), consider the following statements
 - The state-of-the-art MBT Mk-1A is a new variant of Arjun tank designed to enhance fire power, mobility and survivability.
 - It was designed and developed by the Hindustan Aeronautics Limited (HAL).

Select the correct statement.

a) 1 only b) 2 only
c) Both d) None
- Consider the following statements.
 - Kurinjomala sanctuary is located in Nilgiri district of Tamil Nadu.
 - The Paliyan tribes of Tamil Nadu use the blossom period of Neelakurinji flower as a reference to calculate their ages.
 - All Kurinji flowers bloom once in twelve years only.

Select the correct answer from the following codes.

a) 1 only b) 1 and 3 only

