

Mahadayi Water Issue

❖ Context

- Opposition members tried to disrupt Governor's address to the Goa Assembly demanding a statement from him on the **Mahadayi river water diversion issue**.

Why The Dispute?

- **The Kalasa Banduri Nala project** aims to divert water from Mahadayi to satisfy the drinking water needs of **Belagavi, Dharwad, Bagalkot and Gadag districts**.
- Though the project was first proposed in the early 1980s, it has remained on paper owing to a **dispute between Karnataka, Goa and Maharashtra**.
- As per plans, barrages are to be built against Kalasa and Banduri streams, **tributaries of Mahadayi** and water diverted towards Karnataka have parched districts.
- **Mahadayi originates inside the Bhimgad Wildlife Sanctuary** in the Belagavi district of Karnataka and flows into the Arabian Sea in Goa.
- Due to the protests in Goa and also due to concerns over ecological damage, **the project was put on hold** by the then government.
- The **dispute gained steam in 2006**, when the coalition government in Karnataka decided to start work on the project.
- Goa then approached the **Supreme Court**, seeking the creation of a Tribunal to settle the water sharing dispute.
- A **Tribunal was finally set up** by the government in November 2010.

What did the Tribunal say?

- The Tribunal in 2018 awarded 13.42 TMC water from Mahadayi river basin to Karnataka, 1.33 TMC to Maharashtra and 24 TMC to Goa.

- **In Karnataka's share**, 5.5 TMC was to meet drinking water needs and 8.02 TMC was for hydro-electricity generation.
- **Of the 5.5 TMC, 3.8 TMC** was to be diverted to Malaprabha basin through Kalasa and Banduri Nalas (canals). This was notified by the Central government in February 2020.

What Happened after the Notification?

- After the Tribunal award, Goa filed a **Special Leave Petition** in the Supreme Court in July 2019, challenging the quantum of allocation.
- Subsequently, in October 2020, it filed a **contempt petition before the SC**, accusing Karnataka of illegally diverting water from the Mahadayi basin.
- **Civil appeals** were also filed by Maharashtra over the dispute.

Politics over the issue:

- The project has been a long-standing **demand of Karnataka residents set to benefit from it**.
- **With Assembly elections due this year**, the state government, **despite the petitions pending in the SC**, has decided to go ahead with the project, after securing a go-ahead from the Central Water Commission (CWC).
- A clearance from the Ministry of Environment, Forest and **Climate Change (MoEFCC) is still awaited**.

Exoplanets

❖ Context

- Recently, The **National Aeronautics and Space Administration (NASA)** announced that the **James Webb Space Telescope** has discovered its **first new exoplanet**.

Key Highlights:

- Researchers have labelled the planet as **LHS 475 b**, and it's roughly the **same size as Earth**.
- It is located just **41 light-years away**.
- The planet orbits very close to a red dwarf star and completes a full orbit in just two days.

Exoplanets

- Exoplanets are **planets that orbit other stars and are beyond our solar system**.
- According to NASA, to date, more than 5,000 exoplanets have been discovered.
- Scientists believe that there are more planets than stars as each star has at least one planet orbiting it.
- Exoplanets come in a **host of different sizes**.
- They can be gas giants bigger than Jupiter or as small and rocky as Earth.
- They are also known to **have different kinds of temperatures** — boiling hot to freezing cold.
- **Significance of Studying Exoplanets**
 - Studying exoplanets broadens our understanding of other solar systems.

- It also helps us piece together information about our own planetary system and origin.
- To find out the distance between an exoplanet and its host star.
 - This helps scientists determine if a discovered world is habitable or not.

Red Dwarf Star

- Red dwarf stars are the most common and smallest in the universe.
- As they **don't radiate much light**, it's very tough to detect them with the naked eye from Earth.
- However, as red dwarfs are dimmer than other stars, it is easier to find exoplanets that surround them.
- Therefore, red dwarfs are a popular target for planet hunting.

James Webb Space Telescope

- The telescope has been developed under an international partnership between **NASA**, the European Space Agency (**ESA**) and the Canadian Space Agency (**CSA**).
- It was launched aboard a rocket on December 25, 2021.

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- It headed to an outpost 1.5 million kilometers (9,30,000 miles) from Earth.
- It is currently at a point in space known as the Sun-Earth **L2 Lagrange point**.
 - L2 is approximately 1.5 million km beyond Earth's orbit around the Sun.
- It is a successor of the **Hubble Telescope**.
- The telescope will study the **atmospheres of a wide diversity of exoplanets**.
- It will also **search for atmospheres similar to Earth's**, and for the signatures of key substances such as **methane, water, oxygen, carbon dioxide, and complex organic molecules**, in hopes of finding the building blocks of life.

Antimicrobial Resistance (AMR)

❖ Context

- Experts have been warning for decades that the **threat of antibiotic resistance could take us back in time to when even simple infections were deadly**.

Key Highlights:

- A **study in 2019 found more than 1 million people a year died** from infections linked to microbes that are resistant to antibiotics — more than those who died due to malaria or with HIV/AIDS.
- Experts predict that if the problem remains unsolved, 10 million people could die as a result by 2050.

About Antimicrobial Resistance:

- **Antimicrobials** – including antibiotics, antivirals, antifungals and antiparasitics – are medicines used to prevent and treat infections in humans, animals & plants.
- **Antimicrobial Resistance (AMR)** occurs when bacteria, viruses, fungi & parasites change over time and **no longer respond to medicines making infections harder to treat** and increasing the risk of disease spread, severe illness and death.
 - As a result of drug resistance, antibiotics and other antimicrobial medicines become ineffective & infections become increasingly difficult or impossible to treat.

• Mechanism of Causing Antibiotic Resistance

- Antibiotics work by **binding to a specific target protein on a bacteria**, then entering to kill it from the inside.
- **Penicillin**, for example, weakens the bacterial cell wall, causing the cell to disintegrate.
- The most common ways bacteria evade antibiotics come from **mutations** that allow them to stop drugs from binding to bacteria.
- It's like the bacteria changed the locks so the antibiotic key no longer opens the cell door.



News in Between the Lines

Mission LiFE



❖ Context

- **National Museum of Natural History**, a subordinate office of Ministry of Environment, Forest and Climate Change organized an Online Interactive Session on **Pariksha Pe Charcha** in line of **Mission LiFE**.

❖ About Mission LiFE:

- **At the 2021 UN Climate Change Conference (UNFCCC COP26)**, Prime Minister of **India announced Mission LiFE**, to bring individual behaviour at the forefront of the global climate action narrative.
- **LiFE envisions** replacing the prevalent 'use-and-dispose' economy, governed by mindless and destructive consumption **with a circular economy**, which would be defined by mindful and deliberate utilization.
- **The Mission intends to nudge** individuals to undertake simple acts in their daily lives that can contribute significantly to climate change when embraced across the world.
- The Mission plans to create and nurture a **global network of individuals, namely 'Pro-Planet People' (P3)**, to adopt and promote environmentally friendly lifestyles.

First Evidence Of Solitary Waves Near Mars

❖ Context

- **First evidence of solitary waves near Mars** may decode the mystery behind ion loss in the planet.

❖ Key Highlights:

- For the first time, a research team from the **Indian Institute of Geomagnetism (IIG)**, an autonomous institute of the Department of Science and Technology (DST) has identified and reported the **solitary waves in the Martian magnetosphere**.

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- It is being identified with the help of **Mars Atmosphere and Volatile Evolution (MAVEN) spacecraft of NASA.**
- These solitary waves are **distinct electric field fluctuations in the Martian magnetosphere** that control particle energization, plasma loss, and transport through wave-particle interactions.
- The magnetosphere is weak but highly dynamic and formed due to the **direct interaction of solar winds with the Martian atmosphere.**
- Unlike Earth, the planet Mars do not have any intrinsic magnetic field. This allows the high-speed solar wind to interact directly with the Mars atmosphere, like an obstacle in flow.

VARUNA' – 2023



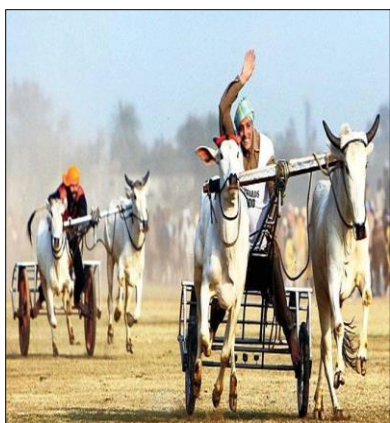
❖ Context

- The 21st Edition of the **Bilateral Naval Exercise** between India and France – **Exercise VARUNA** commenced on the Western Seaboard.

❖ Key Highlights:

- While the bilateral exercise between the two navies was initiated in 1993, it was inaugurated as '**VARUNA**' in **2001** and has become a hallmark of India – France strategic bilateral relationship.
- This edition will witness participation of **indigenous guided missile** stealth destroyer **INS Chennai**, guided missile frigate **INS Teg**, maritime patrol aircraft **P-8I and Dornier**, integral helicopters and **MiG29K** fighter aircraft.
- **Units of both navies will endeavor** to hone their war-fighting skills in maritime theatre, enhance their inter-operability to undertake multi-discipline operations in the maritime domain and **demonstrate their ability as an integrated force to promote peace, security and stability in the region.**

Bullock Cart Race



❖ Context

- Recently, a shocking video surfaced online, showing an **illegal bullock cart race taking place at Mira-Bhayandar Flyover in Mumbai.**

❖ Bullock Cart Race:

- The bullock cart riders were seen assaulting the animals.
- Although Bullock cart racing is a traditional sport, which has been made legal now, this incident has imposed questions on allowance of animal cruelty.
- It was previously banned by the Bombay High Court (HC), but the ban was uplifted by Supreme Court (SC) on December 2021.
- Bullock Cart Race is a cultural activity and popular amongst farming community in Maharashtra and Pune districts.
- The Prevention of Cruelty to Animals Act, 1960, is to prevent the infliction of unnecessary pain or suffering on animals and to amend the laws relating to the prevention of cruelty to animals.
- **Other Animal Sports.**

JalliKattu	Bull-taming sport	Played in Tamil Nadu as part of the Pongal harvest festival.
Cock-fights	Fight between two roosters bred	It is common in the state of Andhra Pradesh, Jharkhand, Tamil Nadu and Kerala. not indigenous to India
Kambala	Traditional buffalo race	coastal Karnataka (Udupi & Dakshina Kannada)
Camel Race	Race of Camels	Rajasthan
Dog Fights	It is a blood sport that pits two dogs kept in cages without food for days, against one another for entertainment.	Delhi
Bulbul fights	Often bulbuls are fed intoxicants to make them aggressive.	Assam

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Study: Noise Pollution Affects Dolphins' Ability to Communicate



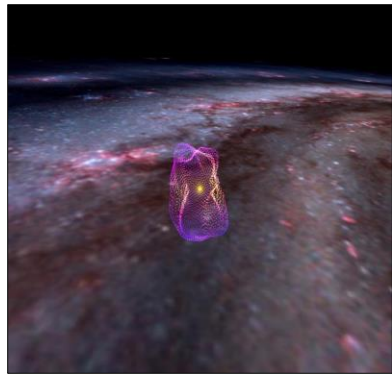
❖ Context

- Recently, A new study found that **noise generated by human activity makes it harder for dolphins to communicate** and coordinate with each other.

❖ Key Highlights:

- Dolphins are social mammals that **communicate through squeaks, whistles and clicks**.
- They also **use echolocation** in order to locate food and other objects.
- As the levels of underwater noise increase, these mammals have to "shout" to each other.
- Therefore, anthropogenic noise coming from large commercial ships, military sonars or offshore drilling can severely impact their well-being.
- **Consequence of Noisy Pollution**
 - Marine animals are known to **use sound to navigate, find food and protect themselves**.
 - Scientists believe that fish species **rely on sounds during reproductive activities**, including mate attraction, courtship and mate choice.
 - Sounds made by drilling, commercial ships and military operations lead to **disruption of marine life**.

Local Bubble



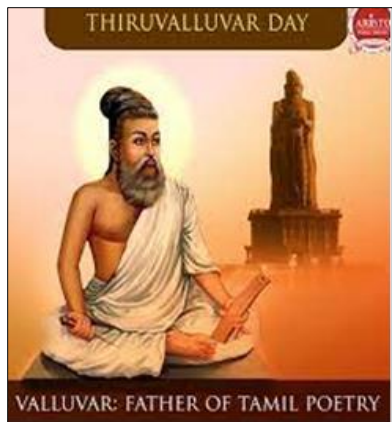
❖ Context

- Researchers from the Center for Astrophysics (CfA) Harvard & Smithsonian have generated a 3D magnetic map of the cavity called **Local Bubble**.

❖ Key Highlights:

- The Local Bubble is a **1,000-light-year-wide cavity** or a **superbubble**.
- Other superbubbles also exist in the Milky Way.
- Space is full of these superbubbles that **trigger the formation of new stars and planets** and influence the overall shapes of galaxies.
 - Star-forming regions occur along the bubble's surface.
- **Local Bubble is thought** to have originated from supernovae roughly 14 million years ago.
 - Supernova is a cosmic explosion occurring when stars meet their end.
 - Supernovae explosions release tremendous amounts of radio waves and X-rays and also cosmic rays.
- Mechanisms powering the formation and expansion of the Local Bubble are not well-understood.

Thiruvalluvar Day



❖ Context

- The Prime Minister, **has paid homage to Thiruvalluvar on Thiruvalluvar Day** and recalled his noble thoughts.

❖ About Thiruvalluvar Day

- The Government of Tamil Nadu celebrates **the 15th (16th on leap years) of January** as Thiruvalluvar Day in the honour of the poet Thiruvalluvar, as part of the **Pongal celebrations**.
- Thiruvalluvar was a **celebrated Tamil poet and philosopher** who lived in the 4th century BCE.
- Commonly known as **Valluvar**, he is best known for authoring **Thirukkural**, a collection of couplets on ethics, political and economic matters, and love.
- The text is considered as one of the **finest works of the Tamil literature**.
- Thiruvalluvar was chosen as the **Tamil language's greatest historical figure** after Tamil scholars unanimously agreed to the proposal.
- As a result, **a resolution to celebrate a day known as "Thiruvalluvar Day" for him by all Tamils was passed on January 17th 1935**.

