

SCIENCE & TECHNOLOGY**NASA'S SPACE LAUNCH SYSTEM (SLS) ROCKET ARTEMIS I ROLLED OUT**

- Recently, NASA's Space Launch System (SLS) rocket Artemis I rolled out from Kennedy Space Centre.

NASA's Artemis Mission**Aim:**

- To land humans on the moon by 2024, and it also plans to land the first woman and first person of colour on the moon.
- To contribute to scientific discovery and economic benefits and inspire a new generation of explorers.

Named after:

- The twin sister of Apollo from Greek mythology.
- Artemis is also the goddess of the moon.

About the mission:

- Artemis I is the first of NASA's deep space exploration systems.
- It is touted as the next generation of lunar exploration.
- It is an uncrewed space mission where the spacecraft will launch on SLS, the most powerful rocket in the world.
- It will travel 2,80,000 miles from the earth for over four to six weeks during the course of the mission.

Launch dates:

- Artemis 1: Summer 2022 (TBC)
- Artemis 2: 2022-2023 (TBC)
- Artemis 3: 2024

Spacecraft:

- The Orion spacecraft is going to remain in space without docking to a space station, longer than any ship for astronauts has ever done before.

SLS Rocket:

- The SLS rocket has been designed for space missions beyond low-earth orbit.
- It can carry crew or cargo to the moon and beyond.

Artemis Base Camp:

- Base camp will be established on the surface and a gateway in lunar orbit to aid exploration by robots and astronauts.
- It will give astronauts a place to live and work on the moon.
- It includes a modern lunar cabin, a rover, and a mobile home.

Gateway:

- The gateway is a critical component of NASA's sustainable lunar operations and will serve as a multi-purpose outpost orbiting the moon.
- It is a spaceship in lunar orbit where astronauts will transfer between Orion and the lander on regular Artemis missions.
- Gateway will remain in orbit for more than a decade, providing a place to live and work, and supporting long-term science and human exploration on and around the Moon.

Space agencies involved:

- The Canadian Space Agency has committed to providing advanced robotics for the gateway,
- The European Space Agency will provide the International Habitat and the ESPRIT module, which will deliver additional communications capabilities among other things.
- The Japan Aerospace Exploration Agency plans to contribute habitation components and logistics resupply.

Significance

- More Knowledge:** As more is known about the Moon compared with 50 years ago (and technologies have greatly advanced), NASA claims that this next series of missions will be able to retrieve samples more strategically than during the Apollo era.
- Finding Resources:** The discovery of water on the Moon and potential deposits of rare minerals hold promise for both scientific and economic exploration and exploitation.
- Way to Mars:** It will pave a way to mars explorations. NASA sees Artemis as laying the foundation for both international space agencies and private companies to build a lunar settlement and economy, and from there eventually send humans to Mars.

- **Lunar Economy:** It will enable a growing lunar economy by fueling new industries, supporting job growth, and furthering the demand for a skilled workforce.

ISRO's Attempt to Moon Exploration

- **Chandrayaan 1:** Chandrayaan-1 was the first lunar space probe of the Indian Space Research Organisation (ISRO).
 - ❖ It began in 2007 with an agreement between India's space agency ISRO and Russia's ROSCOSMOS for mutual cooperation.
 - ❖ It confirmed the presence of lunar water and evidence of lunar caves formed by an ancient lunar lava flow.
- **Chandrayaan 2:** It is India's second mission to the moon and comprises a fully indigenous Orbiter, Lander (Vikram) and Rover (Pragyan).
- **Chandrayaan 3:** The Chandrayaan-3 mission is a follow-up of Chandrayaan-2 of July 2019, which aimed to land a rover on the lunar South Pole.

POLITY & GOVERNANCE

Mekedatu River Project Controversy

Karnataka and Tamil Nadu are heading for a political confrontation over the Mekedatu drinking water project across river Cauvery.

Mekedatu Project

- **Originally mooted in 1948:** Mekedatu is a drinking water cum power generation project across river Cauvery.
- **Location:** Proposed by Karnataka, the project envisages a reservoir near Ontigondlu, about 1.5 km from Mekedatu in Ramanagara district of south Karnataka at the confluence of the Cauvery and Arkavathi rivers. It is 4 km from the Tamil Nadu border and 100 km from Bengaluru.
- **Cauvery Water Disputes Tribunal:** Karnataka gave the project shape after the final award of the Cauvery Water Disputes Tribunal was notified in 2013 allocating the riparian states their shares.
- **Cost:** The project cost is estimated at Rs 9,000 crore.

Issues associated with the project

- **Multiple clearances:** The project will need multiple clearances from the Centre and courts as it involves the Cauvery water sharing dispute.
- **Affects Natural Habitats:** The proposed land for the submergence zone is habitats for certain threatened species. The project will be adversely impacting their natural habitat.
- **Tussle with Tamil Nadu:**
 - ❖ Tamil Nadu had all along strongly opposed the project and approached the Supreme Court as well saying any dam proposal by upper riparian states in the Cauvery basin would deprive the state's delta farmers of their rightful share of water.
 - ❖ The state contended that the proposed reservoir would affect the natural flows of the river Cauvery and nullifies the final adjudication of the settlement of the centuries-long Cauvery river dispute through the formation of the Cauvery Water Regulation Committee.
 - ❖ Karnataka has maintained that the extra drawing of water will not, in any way, affect the mandatory allocation of water to Tamil Nadu and Puducherry.
- **Karnataka say's** the project falls inside the jurisdictional limit of Karnataka and Tamil Nadu's permission is not needed. It also argues that since there is no stay in any court for the project, Karnataka can go ahead.
- **On utilizing the surplus water:** Karnataka says that any allocation in this sphere should be done after hydrology studies to ascertain the quantum of excess water available in the basin.

Significance of the project

- It aims to supply drinking water to Bengaluru and surrounding regions but has been challenged in the Supreme Court by Tamil Nadu on the ground that it would eat into the state's share of Cauvery water as adjudicated by the court in 2018.
 - ❖ It would be able to help the city address its water woes.
 - ❖ Currently, more than 30% of Bengaluru is dependent on borewell water.
- **There are also plans to generate 400 MW of power:** The revenue earned from power generation is expected to compensate the Government for its investment on the project within a few years.

Benefits of Construction of Dams

- **Flood control:** Water bodies like dams decrease or eliminate the flood effects.
- **Land improvement:** are the extra benefits that will occur after an increase in the soil productivity because of drainage and land improvement precautions.

- **Potable Water:** Dams supply drinking water and domestic water to address water scarcity.
- **Irrigation:** Dams benefit the dry and unirrigated regions.
- **Energy:** Dams provide energy benefit and make the project more economical with additional value.
- **Transportation benefits:** They will occur in case there is waterway transportation in the project.

Environmental Impacts of Dams

- **Destruction of Nature:** The water regime may change as a result of destruction of nature, unexpected floods may occur and consequently vegetation and natural structures in the riverbanks can be damaged.
- **Affects Fauna:** Normal passing ways of territorial animals are hindered since the dam works as a barrier. The fishes can be damaged while passing through the floodgates, turbines and pumps of the high bodied dams.
- **Rehabilitation:** Dams affect the social, cultural and economical structure of the region considerably. Especially forcing people, whose settlement areas and lands remain under water to migrate, affect their psychology negatively.
- **Loss of Aesthetic Beauty:** The geological and topographical places that are rare with their exceptional beauties, disappear after lying under the reservoir.
- **Chances of Earthquakes:** Some increase in earthquakes may occur because of filling of big dam reservoirs.

Findings

- A dam can serve the purpose of substantially augmenting the needs of a water stressed city but the care should be taken to fulfill environmental compliances and proper environment impact assessment.
- At the same time, the tenets of Cooperative federalism need to be preserved by preventing the possibility of any inter-state disputes.

IMPORTANT FACTS FOR PRELIM

1. EX-DUSTLIK MILITARY EXERCISE

- The third edition of the exercise, titled EX-DUSTLIK would be conducted at Yangiariq, Uzbekistan from March 22 to March 31.
 - ❖ EX- DUSTLIK's is a joint training exercise that is conducted between the armies of India and Uzbekistan.

About

- The Grenadiers battalion that will represent India at this exercise is one of the Indian Army's highly decorated battalions.
- The first edition of the exercise was held in Uzbekistan in Nov 2019, second edition in March 2021 in Ranikhet, Uttarakhand.
- Aim: It aims to provide impetus to the ever-growing military and diplomatic ties between the two nations and reflect the strong resolve of both nations to counter-terrorism.

Significance

- Military diplomacy to connect with Central Asia: The growing military relations with Uzbekistan are part of military diplomacy keeping in mind its connectivity to Afghanistan and Iraq (Central Asia). It is important for India to counter Pakistan in the wake of China's Belt and Road Initiatives.
- Counter-terrorist operations: Both armies shared their expertise and skills in the field of counter-terrorism operations in mountainous/rural/urban scenarios under UN mandate.
- Advanced Technology exchange: Intelligence-based surgical operations, Special Forces tracking techniques, surveillance through a hi-tech command post, slithering operations from helicopters were some of the key elements of the exercise.

2. MINORITY ROHINGYA COMMUNITY

- The US declared that the Myanmar military committed genocide and crimes against humanity against the country's minority Rohingya community.

About

- Earlier, massacres in Bosnia and Herzegovina, Rwanda, Iraq, and Darfur, Islamic State's attacks on Yazidis and other minorities, and China's treatment of the Uyghur Muslim minority has been declared as genocide by the US.
- More than 7.30 lakh Rohingya people fled Myanmar to Bangladesh after the military crackdown started in the Rakhine state in 2017.

- Currently, over a million Rohingya people live in refugee camps of Bangladesh waiting for repatriation to their homeland in the Rakhine province of Myanmar.

Who are Rohingya?

- Rohingya are an ethnic group, representing the largest percentage of Muslims in Myanmar and predominantly live in the Western Myanmar province of Rakhine.
- They speak a dialect of Bengali, as opposed to the commonly spoken Burmese language.
- They are described by the United Nations (UN) as one of the most persecuted minorities in the world.
- The Rohingya population is denied citizenship under the 1982 Myanmar nationality law. They have denied the Rohingya the possibility of acquiring a nationality.
- The flow of Rohingya from Myanmar intensified in 2017 and the coast near the Bangladeshi city of Cox's Bazar was taken over by refugee settlements.
- Recently, Bangladesh started relocating Rohingya refugees from overcrowded camps at Cox's Bazar to Bhasan Char Island, which is an ecologically fragile area prone to floods.

DAILY ANSWER WRITING PRACTICE

Q1. What do you understand by 'de-dollarisation'? Analyse the measures that India must take to safeguard her interests as the phenomenon of 'de-dollarisation' gains momentum. (250 words)

Introduction

- For many years, the US dollar has been the standard currency used in world trade. For example, oil, gold and most commodities are quoted in dollars. Many countries hold their reserves in dollars, in the form of US Treasury Securities. De-dollarisation describes a move away from this world order to one where nations sell their US Treasuries to hold reserves in other currencies, or gold, and seek to use their own currencies for transactions between their most important trade partners.

Body

Various attempts at 'de-dollarisation' in the recent years

- Russia reduced its share of dollar-denominated asset and prioritised national currencies, instead of US Dollar in bilateral trade.
- Russia also developed a national electronic payments system called "Mir" in 2015.
- China aims to use trading platforms and its digital currency to promote de-dollarisation. It has established RMB trading centres in Hong Kong, Singapore and Europe.
- In 2021, the People's Bank of China submitted a "Global Sovereign Digital Currency Governance" proposal at the Bank for International Settlements (BIS) to influence global financial rules via its digital currency, the e-Yuan.
- The IMF added Yuan to its Special Drawing Rights (SDR) basket in 2016.
- In 2017, the European Central Bank exchanged EUR 500 million worth of its forex reserves into Yuan-denominated securities.
- India has also had to work out alternative arrangements, including a barter arrangement, with certain sanctioned countries in the past.

Why India must move towards De-dollarisation

- Indian economy's dynamic with dollar is different than other major economies in the world today.
- Unlike China or Russia or EU and Japan, which hold dollars in significant amounts, India's reserve is not resulted by an export surplus.
- While others accumulate dollars from their earnings of trade surplus, India maintains a large forex reserve even though India imports less than it exports.
- In India's case, the dollar reserves come through infusion of Foreign Direct Investment (FDI) and Foreign Portfolio Investment (FPI), which reflects the confidence of foreign investors in India's growth prospects.
- By accumulation of dollar reserves through this route, India remains vulnerable to policy changes by other nations' monetary policies which are beyond India's own control.
- For instance, it has been often highlighted that a tightening of the US monetary policy leads to capital outflows (capital flight) from India, thus impacting India adversely.

Challenges of de-dollarisation on India

- Just like Chinese renminbi, Indian rupee is also not yet fully convertible at the exchange markets.
- While this means that India can control its burden of foreign debt, and inflow of capital for investment purposes in its economy, it also means an uneasy access to capital, less liquidity in financial market, and less business opportunities.

- Considering India's present dollar dependence, whether US sees India's move towards de-dollarisation as a direct challenge to US-India relations, or accepts it as a shift in the global realities, has to be seen.
- New Delhi has resisted a de-dollarization push for long.
- For instance, Back in 2009, when Russia and China had started the push via BRIC mechanism, it was argued that New Delhi would not like to upset Washington, especially after the historic US-India civil nuclear agreement was signed just a year before in 2008 -for full civil nuclear cooperation between the two nations.

Steps that India must take in this regard.

- India can look towards having an increased share of euros and gold in its foreign exchange reserves.
- Currency swap agreements between India and other nations can help in bilateral trades without depending on USD.
- Starting from Russia-India transactions, trade with Iran, EAEU, BRICS and SCO members in national or digital currencies can also become a reality in near future.
- A central bank digital currency (CBDC) that bypasses the dollar can be another alternative.
- For instance, China submitted a "Global Sovereign Digital Currency Governance" proposal at the Bank for International Settlements to influence global financial rules via its digital currency, the e-Yuan.
- India can push for a global currency or an arrangement like the IMF's SDR.
- India can also look towards having an increased share of euros and gold in its foreign exchange reserves.
- India has several options for initiating its de-dollarization process.

Conclusion

An increasing number of voices are today pointing towards the arrival of the Asian century. With China now being the leading economic power in the world, US economy on a slowdown, and emergence of an increasing polycentric structure in world economy, the dominance of dollar is bound to witness a shake-up. Diversification away from USD is a good way forward for India to insulate economy from geopolitical risks.

DAILY QUIZ

- Q1.** With reference to black box, consider the following statements:
1. It is a recording device used by aviation investigators to analyse the events leading to the air mishap.
 2. It aims to establish legal liability.
 3. Australia was the first country to make black boxes mandatory in its aeroplanes
- Which of the given above statements are not correct?
- (a) **1 and 3 only** (b) 2 only (c) 1 and 2 only (d) only 1
- Q2.** Article 355 of Indian Constitution recently seen in the news, it is related to
- (a) Directive for development of the Hindi language
 - (b) Power to extend functions of Public Service Commissions
 - (c) Freedom of trade, commerce and intercourse
 - (d) **Duty of the Union to protect States against external aggression and internal disturbance.**
- Q3.** The Mekedatu water dispute is a cause of concern for which two states?
- (a) Kerala and Tamil Nadu
 - (b) Andhra Pradesh and Odisha
 - (c) Goa and Maharashtra
 - (d) **Karnataka and Tamin Nadu**
- Q4.** In the context of space missions, what is "Artemis Mission" related to?
- (a) A newly launched geoportal of ISRO with 3D imaging capabilities of India
 - (b) A satellite launch by ISRO for promoting the distance education in India
 - (c) **The name given to NASA's manned mission to the Moon.**
 - (d) A probe related to studying the Asteroids between the March and Jupiter belt.
- Q5.** Ireland is separated from the United Kingdom by
- (a) Atlantic Ocean (b) North Sea (c) English Channel (d) **Irish Sea**