Prelim Bits 06-09-2022 | UPSC Daily Current Affairs

Mohenjo-daro

The recent spell of heavy rains and floods that ravaged large parts of Pakistan's Sindh province has taken a heavy toll on the archaeological site of Mohenjo-daro.

- Mohenjo-daro, a group of mounds and ruins, is a 5000-year-old archaeological site.
- Mohenjo-daro is located on the bank of the **Indus river**, northern Sindh province, southern **Pakistan**.
- Mohenjo-daro, which means 'mound of the dead', was one of the oldest cities of the world.
- Mohenjo-Daro was the largest city of the Indus Valley Civilization.
- Known to be a **model planned city** of the Indus Valley Civilisation, the houses here had Great Bath, bathrooms, toilets and drainage system.
- The sheer size of the city, and its provision of public buildings and facilities, suggests a **high level of social organisation**.
- The archaeological importance of the site was first recognized when archaeologist RD Banerji visited it in 1922, one year after the discovery of Harappa.

> *Mohenjo-daro was designated a UNESCO World Heritage site in 1980. But, it might be removed from the world heritage list, if urgent attention towards its conservation and restoration is not given.*

Reference

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2. https://www.britannica.com/place/Mohenjo-daro
3. https://tribune.com.pk/story/2374897/conservation-work-starts-at-mohenjo-daro-after-devastating-rains

Study on Climate Pledges

A new study on different countries' Climate Pledges or the Nationally Determined Contributions (NDC) was published recently.

> *The Paris Agreement is a global treaty wherein countries agreed to cooperate to reduce GHG emissions and rein in climate change. It seeks to limit global warming to below 2°C, preferably to 1.5°C, compared to pre-industry levels.*

- The study included eight countries - India, the US, China, Australia, Saudi Arabia, Russia, Australia and Brazil - and the European Union.
- This study ranked the Climate Pledges or the Nationally Determined Contributions (NDC) of different countries on the basis of,
    1. Compliance and
    2. Ambition.



- This study ranks India's updated climate pledges to the Paris Agreement 4th in ambition, 5th in compliance.
- The European Union (EU) took the lead while the United States was ranked last in compliance and second to last in ambition.
- **Related Links** - Nationally Determined Contributions, India's five-point Climate Action Plan, Net Zero Carbon Targets

Reference

1. https://www.downtoearth.org.in/news/compliance/study-ranks-india-s-climate-pledges-4th-in-ambition-5th-in-compliance-84659
2. https://group.springernature.com/gp/group/media/press-releases/springer-nature-signs-the-climate-pledge/19085374

Rule Curve

The Rule Curve for Mullaperiyar Dam comes into effect between June 10 and November 30, during which the dam gets maximum inflows from the South West Monsoon.

> *According to Tamil Nadu Water Resources Organisation, Mullaperiyar is the first reservoir to have Rule Curve implemented, in India.*

- Rule Curve is a tabulation that specifies **quantum of storage of water or empty space** to be maintained in a reservoir during different times of a year, based on the rainfall data for 35 years.
- The rule curve also decides on fluctuating storage levels of the reservoir.
- It is also the deciding factor on the **opening of the reservoir gates**.
- The rule curve is set by the **Central Water Commission** and during the monsoon, the number is fixed every 10 days once, based on the water level present.
- It helps in decision-making for officials in charge of the dam, for smooth operation of shutters, especially for moderation of flood, during monsoon times without permission from the top hierarchical ladder.
- **Rules** - Kerala insisted with the Supreme Court to insist that Tamil Nadu, which maintains and operates the dam, prepare a Rule Curve for flood control and flood management.
- As a result of implementation of the Rule Curve, Tamil Nadu will have to keep the water level below the permitted maximum level of 142 feet for 150 days in a year, the period when the dam gets heavy inflows.

- Under the Rule Curve method, water is not allowed to be stored to the permissible maximum level at the time when the reservoir receives huge inflows.
- **Problem** -Mullaperiyar dam has the unique limitation of lesser head sluice discharge with a maximum discharge capacity of 2,300 cusecs.

Head sluice discharge is the withdrawal of water from the dam through tunnel towards Tamil Nadu side.

- This is minimum in comparison to the dam's maximum flood design of 1.24 lakh cusecs. In 2017,the dam received 30,000 cusecs of inflow.
- Surplus water is released towards Idukki district of Kerala through shutters.

Reference

1. https://www.thehindu.com/news/national/tamil-nadu/explained-rule-curve-for-mullaperiyar/article65836798.ece?homepage=true
2. https://www.sciencedirect.com/topics/engineering/rule-curve
3. https://news.abplive.com/states/mullaperiyar-dam-what-is-rule-curve-that-decides-on-the-amount-of-water-releasing-from-dam-1493107

Floating Gas Terminals

As winter nears, European nations have embraced a short-term fix to replace the natural gas they once bought from Russia by opening a series of roughly 20 floating terminals.

- The floating terminals are essentially **liquefied gas tankers** that can return the fuel to its gas state themselves, which means a complete port is not required.
- These floating terminals would receive liquefied natural gas from other countries and convert it into heating fuel.
- Some scientists warn that these terminals would perpetuate Europe's reliance on natural gas, which releases climate-warming methane and carbon dioxide when it's produced, transported and burned.
- The floating terminals will end up becoming a long-term supplier of Europe's vast energy needs that could last years, if not decades.
- Such a trend could set back emission-reduction efforts that experts say have not moved fast enough to slow the damage being done to the global environment.

Floating Gas technology makes the production, liquefaction and storage of natural gas possible at sea.

Reference

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2. https://www.bloomberg.com/news/articles/2022-08-31/europe-plan-for-floating-gas-terminals-raises-climate-fears

3. https://www.reuters.com/business/energy/germany-says-fifth-floating-lng-terminal-be-built-by-end-2022-2022-07-19/

Gemini North Telescope

The Gemini North telescope in Hawai'i captured this brilliant image of a pair of spiral galaxies interacting as they clash and merge into each other.

> *The spiral galaxies NGC 4568 and NGC 4567 are entangled in their mutual gravitational fields and should eventually combine to form a single elliptical galaxy in around 500 million years.*

- The Gemini North Telescope is one of the twin telescopes at the International Gemini Observatory, Maunakea, Hawai'i.
- This optical/infrared telescope is operated by the US National Science Foundation's (NSF) NOIRLab.
- This telescope was built to take advantage of the superb atmospheric conditions on this long-dormant volcano that rises about 4214 meters into the dry, stable air of the Pacific.
- Since 2002 Gemini North has also been known as the **Frederick C. Gillett Gemini North telescope**.

International Gemini Observatory

- International Gemini Observatory consists of two 8.1-metre telescopes,
    1. Gemini North Telescope, located on the dormant volcano Mauna Kea on the island of Hawaii in the Northern Hemisphere, and
    2. Gemini South Telescope, located at the Cerro Tololo Inter-American Observatory on Cerro Pachon in Chile in the Southern Hemisphere.
- The Gemini Observatory's international headquarters is located in Hilo, Hawai'i at the University of Hawaii Hilo's University Park.
- The two telescopes have been optimized for observations at infrared wavelengths by having their primary mirrors coated with silver.

> *The silver coatings do not emit as much thermal infrared radiation as the more commonly used aluminum coatings.*

- Both of the Gemini telescopes have been designed to excel in a wide variety of optical and infrared capabilities.
- By incorporating technologies such as laser guide star adaptive optics and multi-object spectroscopy, astronomers in the Gemini partnership explore the universe in unprecedented depth and detail.
- **Goals**
    1. Twin telescopes in both hemispheres provide participant members with access to

the entire sky
2. To provide the best image quality possible from the ground for telescopes of their size.
3. To provide the cleanest possible (i.e. lowest possible emissivity) telescopes, for optimal infrared observing from the ground.

Reference

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2. https://noirlab.edu/public/programs/gemini-observatory/gemini-north/
3. https://www.britannica.com/topic/Gemini-Observatory

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