Prelim Bits 09-02-2023 | UPSC Daily Current Affairs

Operation Dost

So far, six planes from India carrying rescue personnel, essentials, and medical equipment for earthquake relief efforts has reached Turkey.

- Turkey and Syria witnessed the deadliest earthquakes in over a decade.
- India has launched Operation Dost after Turkey - Syria earthquake to help those in need by earthquake-hit countries.
- Under 'Operation Dost', India is sending a massive amount of humanitarian aid for Turkey and Syria.
- The Indian Government has sent tons of relief material to both Syria and Turkey in collaboration with the Indian Army as part of Operation.
- Under this, India sent to Turkey relief materials, a mobile hospital, and specialised search and rescue teams.
- It also sent 6 tonnes of relief materials, including life-saving medicines and medical items.
- **Syria -** India has sent emergency medicines and equipment including portable ECG machines, patient monitors, and other essential medical items to Syria.

India's other relief operations

- **USA -** An Indian Air Force aircraft delivered 25 tonnes of relief supplies for the Hurricane Katrina victims in USA.
- **Maldives -** Under "***Operation Castor***", 4 aircraft and 2 Naval ships were engaged in relief operations, after the 2004 Tsunami.
- **Sri Lanka -** India sent its forces to carry out rescue operations, called "***Operation Rainbow***", in Sri Lanka hours after the 2004 Tsunami.
- **Myanmar -** When cyclone Nargis hit Myanmar in 2008, India sent relief material and among the first countries to send aid.
- **Japan -** India sent 46 members of NDRF for rescue operations, after 2011 Tsunami, apart from providing relief materials.
- **Nepal -** In the aftermath of the 2015 earthquakes, the NDRF deployed 16 rescue teams and sent tonnes of relief materials to Nepal.

References

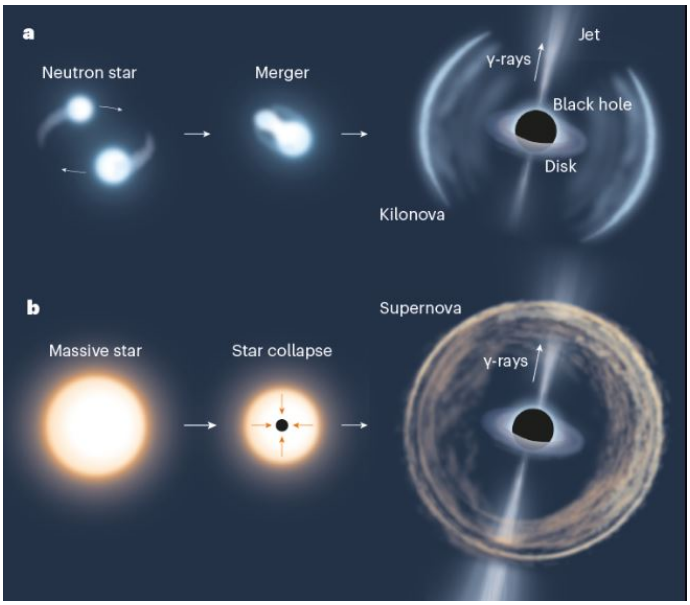
1. The Hindu - Operation Dost

2. Business Standard - Operation Dost

Kilonova

Researchers have confirmed the detection of a star system that will one day end in a kilonova.

- Supernova is the explosive demise of heavy stars when they run out of fuel for nuclear fusion.
- Neutron stars are formed when the cores of a supernova implode, crushing their constituent protons and electrons together into a super-dense ball of neutrons.
- A kilonova is a similar cosmic event that occurs when a neutron star smashes into another neutron star or a black hole.
- A kilonova releases heavy metals like gold, silver, and selenium into outer space at tremendous velocities, as well as radiation.
- A kilonova radiation also accompanies a gamma-ray burst, one of the most energetic cosmic events ever known.



(a) Kilonova (b) Supernova

Astronomers first detected a kilonova in 2017, when they recorded gravitational waves from such an event.

- The newfound star system has been labelled CPD-29 2176, and is located about 11,400 light-years from the earth.
- CPD-29 2176 is currently a neutron star and a star orbiting each other.
- The star is expected to become a neutron star and the 2 neutron stars are expected to collide with each other later.
- It is extremely rare that only 10 star systems that exist in the Milky Way will end in kilonovae.

References

1. The Hindu - What is a Kilonova?
2. Space - 1st twin stars doomed to collide in Kilonova explosion

Public Float

The index provider MSCI has announced that it is reviewing the free-float status of Adani group securities.

- Public float is also known as ***free float*** which refers to the shares of a company that can be publicly traded and are not restricted (held by insiders).
- Free-float are those shares which are readily available for trading in the stock market.
- It generally excludes promoters' holding, government / strategic holding and other locked-in shares, which will not come to the market for trading in the normal course.

Free Float = Outstanding Shares – Restricted Shares – Closely-held Shares

- This restricted shares belong strategic investors who do not usually negotiate their holdings.
- **Minimum Public Shareholding (MPS) Norms -** A listed entity must have at least 25% of public shareholding.
- It could be anyone other than a promoter such as an institution or an individual.
- SEBI grants between 3 and 5 years to achieve a 25% public float.

Free Float Methodology

- The free-float method excludes locked-in shares, such as those held by insiders, promoters, and governments.
- It is used to provide a more accurate reflection of market movements and stocks actively available for trading in the market.
- The free-float methodology has been adopted by many of the world's major indexes.
- MSCI calculates free float-adjusted market-capitalization for each security to calculate the weights of the securities in the MSCI indexes.

References

1. Business Standard - What is a public float and why is it important?
2. Times of India - What is free float?

GOBAR Dhan

Under the GOBAR-Dhan scheme, 500 new 'waste to wealth' plants with a total investment of Rs 10,000 crore was announced in Budget 2023.

- Of the 500 new 'waste to wealth' plants announced for promoting circular economy,
    1. 200 will be compressed biogas plants (CBG)
    2. 300 will be community or cluster-based plants
- Galvanizing Organic Bio-Agro Resources (GOBAR)-Dhan was launched by the Government of India in 2018.

- GOBAR-Dhan is part of the biodegradable waste management component under the Swachh Bharat Mission-Gramin.
- **Implementation -** Ministry of Drinking Water & Sanitation
- **Aim -** To positively impact village cleanliness and generate wealth and energy from cattle and organic waste.
- **Focus areas -** keep villages clean, increase the income of rural households and generate energy and organic manure from cattle waste.
- **Biogas** is a co-product of the anaerobic digestion of biodegradable waste such as agricultural waste, animal waste like dung.
- Biogas contains about 55-65% methane, 35-44% carbon dioxide and traces of other gases such as hydrogen sulphide, ammonia and nitrogen.
- **CBG -** The purified and upgraded (up to 98%of purity) biogas under high pressure is called compressed biogas (CBG).
- CBG is suitable to be used as a green fuel for transportation or filling of cylinders.

References

1. Down To Earth - GOBAR-Dhan Scheme
2. Vikaspedia - GOBAR Dhan Scheme

Crew Module Recovery Model

The Indian Space Research Organisation (ISRO), along with the Indian Navy, has conducted an important trial for the Gaganyaan mission.

- The Gaganyaan project envisages demonstration of human spaceflight capability of India.
- Gaganyaan will be launching a crew of 3 members for a 3 day mission.
- The members will be launched to an orbit of 400 km and bringing them back safely to earth, by landing in Indian sea waters.
- Vikas engine and Launch Vehicle Mark-3 (LVM-3) will be used in this mission.
- Orbital Module (OM) that will be Orbiting Earth comprises of Crew Module (CM) and Service Module (SM).
- The crew module system undergoes several tests before launch and recover the module using new test launch rockets.
- The initial recovery trials of the Crew Module was conducted in the Navy's Water Survival Test Facility (WSTF) in Kochi.
- A Crew Module Recovery Model (CMRM) was used for the trials.
- The CMRM simulates the mass, center of gravity, outer dimensions, and externals of the actual Crew Module at touchdown.
- The sequence of operations required for the recovery of the Crew Module were carried out as part of the trials.
- The safe recovery of the crew is the final step for a successful human spaceflight.
- It has to be carried out with the minimum lapse of time.

The first trial (uncrewed flight) for Gaganyaan is planned by the end of 2023 or early 2024, followed by sending Vyom Mitra, a humanoid and then with the crew

onboard.

References

1. The Hindu - ISRO and Indian Navy conduct key trials
2. ISRO - Recovery trails Gaganyaan Mission