Prelim Bits 12-12-2019

PSLV C-48

- PSLV in its 50th flight (PSLV-C48), successfully launched RISAT-2BR1 along with 9 commercial satellites.
- RISAT-2BR1 is a radar imaging earth observation satellite weighing about 628 kg.
- It will provide services in the field of Agriculture, Forestry and Disaster Management. The mission life of RISAT-2BR1 is 5 years.
- The nine commercial satellites were from Israel, Italy, Japan and USA.
- These satellites were launched under a commercial arrangement with New Space India Limited (NSIL), the commercial arm of ISRO.
- PSLV-C48 has launch vehicle in 'QL' configuration i.e with 4 solid strap-on motors.

PSLV

- It is the3rd generation launch vehicle and first Indian launch vehicle to be equipped with liquid stages.
- It emerged as the reliable and versatile workhorse launch vehicle of India with consecutively successful missions.
- It successfully launched two spacecraft such as Chandrayaan-1 in 2008 and Mars Orbiter Spacecraft in 2013.
- 3 variations in PSLV - PSLV-G (General), PSLV-XL variants and PSLV-CA (Core Alone).
- It has 4 stages in its operation to provide thrust in launching spacecraft to different orbits.
- **Stage I**: It uses solid rocket motor that is augmented by 6 solid strap-on boosters. Strap on boosters are used only in G and XL variation.
- **Stage II**: It uses an Earth storable liquid rocket engine, known as the Vikas engine.
- **Stage III**: It uses solid rocket motor that provides high thrust after the atmospheric phase of the launch.
- **Stage IV**: It comprises two Earth storable liquid engines.
- **Capacity** - 1,750 kg of payload to Sun-Synchronous Polar Orbits of 600 km altitude and to 1,425 kg of payload to Geosynchronous and Geostationary orbits, like satellites from the IRNSS constellation.

Heavy Metal Contamination in Indian Rivers

- Central Water Commission released a report which pointed out that 2/3rd of the water quality stations spanning India's major rivers showed contamination by one or more heavy metals.
- The study spanned 67 rivers in 20 river basins.
- The concentration of heavy metals exceeds safe limits set by the Bureau of Indian Standards.
- The presence of metals in drinking water in trace amounts is required for good health and when present above safe limits, it will bring range of disorders.
- **Iron** emerged as the most common contaminant in most of the sampled sites registering levels of the metal above safe limits.
- The other major contaminants found in the samples were lead, nickel, chromium, cadmium and copper.
- Lead, cadmium, nickel, chromium and copper contamination were more common in non-monsoon periods.
- While iron, lead, chromium and copper exceeded 'tolerance limits' in monsoon periods most of the time.
- None of the sites registered **arsenic and zinc** levels above the safe limit.
- Arsenic contamination is a major environmental issue that affects groundwater.
- The main sources of heavy metal pollution are mining, milling, plating and surface finishing industries that discharge a variety of toxic metals into the environment.

Amendment in IBC Code

- Union Cabinet has recently approved the proposal for Insolvency and Bankruptcy Code (Second Amendment) Bill, 2019.
- It amends Insolvency and Bankruptcy Code 2016 to remove certain difficulties being faced during insolvency resolution process.
- It includes a provision to ring-fence successful resolution applicants from criminal proceedings against offences committed by previous managements or promoters of a company.
- Thus, it gives the comfort to buyers of stressed assets.
- It would also ensure that the substratum of the business of a corporate debtor is not lost.
- It also held that licences, permits, concessions, clearances etc. cannot be terminated or suspended or not renewed during the moratorium period.

Rare Earth Metals

- Rare Earth Elements or Rare Earth Metals are a set of 17 chemical elements in the periodic table that have similar chemical properties.
- It includes 15 lanthanides plus scandium and yttrium.
- One of the Rare Earths, promethium, is radioactive.
- Some of the applications of Rare Earth Metals are,
    i. Cerium is used in Space shuttle components, jet engine turbines and drones
    ii. Scandium is used in Televisions and fluorescent lamps
    iii. Yttrium is used in drugs to treat rheumatoid arthritis and cancer
    iv. Other applications - Technologies of consumer electronics, computers and networks, communications, clean energy, advanced transportation, healthcare, environmental mitigation, and national defence.
- China dominates the production of these elements.
- **Recent Development -** The United States Army has planned to fund the construction of a Rare Earths processing facility,
- This is to secure the domestic supply of minerals that are used to make military weapons and electronics.
- The decision comes after China threatened to stop exporting Rare Earth materials to the US amid the ongoing trade war between the countries.
- This will be the first financial investment by the US military into commercial-scale Rare Earths production since the Manhattan Project to build the first atomic bomb during World War II.

Source: PIB, The Hindu

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