Daily current affairs

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NASA's Solar Parker Probe

Why in News?

NASA's Parker Solar Probe, enroute to the Sun to unravel its mysteries, has captured a view of Earth, from about 27 million miles away. The image was captured by the WISPR (Wide-field Imager for Solar Probe) instrument, the only imaging instrument on board the Parker Solar Probe.

About Solar Parker Probe:

- The mission aims to ***study the sun***. It will travel through the sun's atmosphere, closer to the surface than any spacecraft before it, facing brutal heat and radiation conditions — and ultimately providing humanity with the closest-ever observations of a star.
- In order to unlock the mysteries of the sun's atmosphere, Parker Solar Probe will ***use Venus' gravity during seven flybys*** over nearly seven years to gradually bring its orbit closer to the sun.
- The spacecraft will fly through the sun's atmosphere as close as ***3.9 million miles to our star's surface***, well within the orbit of Mercury and more than seven times closer than any spacecraft has come before.
- ***The primary science goals*** for the mission are to trace how energy and heat move through the solar corona and to explore what accelerates the solar wind as well as solar energetic particles.

Parker Solar Probe has three detailed science objectives:

1. Trace the flow of energy that heats and accelerates the solar corona and solar wind.
2. Determine the structure and dynamics of the plasma and magnetic fields at the sources of the solar wind.
3. Explore mechanisms that accelerate and transport energetic particles.

Why study corona?

- The corona is hotter than the surface of the sun.
- The corona gives rise to the solar wind, a continuous flow of charged particles that permeates the solar system.

- Unpredictable solar winds cause disturbances in our planet's magnetic field and can play havoc with communications technology on Earth.
- Nasa hopes the findings will enable scientists to forecast changes in Earth's space environment.

Bharat Stage emissions standards

Why in News?

The Supreme Court of India has said that Bharat Standard IV vehicles will not be sold from April 1, 2020, when BS-VI grade petrol and diesel would come into force across the country. A three-judge bench headed by Justice Madan B Lokur said the need of the hour was to move to a cleaner fuel.

What are Bharat Stage emissions standards?

- The Bharat Stage emission standards are standards instituted by the government to regulate the output of air pollutants from motor vehicles from internal combustion engine equipment, including motor vehicles. India has been following European (Euro) emission norms, although with a time lag of five years.
- The BS IV norms had been enforced across the country since April 2017.
- In 2016, the Centre had announced that the country would skip the BS-V norms altogether and adopt BS-VI norms by 2020. Implementation of the intermediate BS-V standard was originally scheduled for 2019.

What is the difference between BS-IV and BS-VI?

- The main difference in standards between the existing BS-IV and the new BS-VI auto fuel norms is the presence of sulphur.
- The BS-VI fuel is estimated to bring around an 80 per cent reduction of sulphur, from 50 parts per million to 10 ppm. According to analysts, the emission of NOx (nitrogen oxides) from diesel cars is also expected to come down by nearly 70 per cent and 25 per cent from cars with petrol engines.

What it means for vehicles?

- The Supreme Court verdict may hit the automobile industry.
- The manufacturers had argued that they still have unsold stock of BS-IV vehicles and requested time till March 31, 2020, so that they be granted reasonable time to sell their stock. Using the introduction of higher grade fuel will be beneficial only if it is done in tandem with the rollout of BS-IV compliant vehicles.
- Using BS-VI fuel in the current BS-IV engines or, conversely, running BS-VI engines on the current-grade fuel, may be ineffective in curbing vehicular pollution, and may damage the engine in the long run.

Why the industry is resisting?

- There are two major industries which now face problems: first is the oil refineries that will need a substantial investment to upgrade. These upgrades will allow the refineries to supply fuel types that can match the BS-V and BS-VI standards.
- Second, the automobile manufacturers also need to progress gradually and skipping a step like BS-V might put extra pressure on the manufacturers to produce compliant vehicles.

The shift of technology from BS-IV to BS-VI is likely to cost anything between Rs 50,000 crore to Rs 80,000 crore to petroleum companies.

SPARC scheme

Why in News?

Ministry of Human Resource Development has launched the web portal of the scheme - "Scheme for Promotion of Academic and Research Collaboration (SPARC)" in New Delhi.

About SPARC scheme:

- The SPARC scheme aims at improving the research ecosystem of India's higher educational institutions by facilitating academic and research collaborations between Indian Institutions and the best institutions in the world.
- It will be implemented up to March 31, 2020 and the Indian Institute of Technology, Kharagpur has been chosen as the National Coordinating Institute to implement the programme.
- Under the scheme, 600 joint research proposals will be awarded for 2 years to facilitate strong research collaboration between Indian research groups with the best in class faculty and renowned research groups in the leading universities of the world, in areas that are at the cutting edge of science or with direct social relevance to the mankind, specifically India.

Eligibility:

- All Indian Institutions ranked in the overall top-100 or category-wise top-100 in the India Rankings (NIRF) are eligible to apply.
- Only such private institutions that are falling in the above category, and also recognised under Section 12(8) of the UGC Act are eligible.
- The partner institution shall be in the top-500 of Q5 World University Rankings or in the top-200 of Q5 World University Rankings by subject.

Benefits:

The scheme will help in improving the research ecosystem of India's higher educational institutions by facilitating academic and research collaborations between Indian Institutions and the best institutions from 28 selected nations to jointly solve problems of national and

international relevance.

Chabahar Port

Why in News?

India, Afghanistan and Iran recently held their first trilateral meeting on Chabahar port project during which they reviewed its implementation. The meeting assumes significance as the strategically-located port on the energy-rich Iran's southern coast was coming under the ambit of US sanctions on Tehran.

Where is Chabahar port?

Iran's Chabahar port is located on the Gulf of Oman and is the only oceanic port of the country. The port gives access to the energy-rich Persian Gulf nations' southern coast and India can bypass Pakistan with the Chabahar port becoming functional.

Why Chabahar port is crucial for India?

- The first and foremost significance of the Chabahar port is the fact that India can bypass Pakistan in transporting goods to Afghanistan. Chabahar port will boost India's access to Iran, the key gateway to the International North-South Transport Corridor that has sea, rail and road routes between India, Russia, Iran, Europe and Central Asia.
- Chabahar port will be beneficial to India in countering Chinese presence in the Arabian Sea which China is trying to ensure by helping Pakistan develop the Gwadar port. Gwadar port is less than 400 km from Chabahar by road and 100 km by sea.
- With Chabahar port being developed and operated by India, Iran also becomes a military ally to India. Chabahar could be used in case China decides to flex its navy muscles by stationing ships in Gwadar port to reckon its upper hand in the Indian Ocean, Persian Gulf and Middle East.
- Chabahar port will ensure in the establishment of a politically sustainable connectivity between India and Afghanistan. This is will, in turn, lead to better economic ties between the two countries.
- From a diplomatic perspective, Chabahar port could be used as a point from where humanitarian operations could be coordinated.
