



Russia withdrawing Support from International Space Station

For Prelims: International Space Station (ISS), SpaceX's dragon module, Boeing's Starliner.

For Mains: Russia-Ukraine War, Effect of Policies & Politics of Countries on India's Interests.

Why in News?

Recently, after [Russia invaded Ukraine](#), the [US imposed sanctions on Russia](#) including a ban on transfer of **technology and on Russian banks**.

- Following this, the **Russian space agency Roscosmos** held that the State Corporation will not cooperate with Germany on joint experiments in the Russian segment of the **International Space Station (ISS)**.

What is Russia's role in maintaining the ISS?

- The ISS is built with the cooperation of scientists from **five international space agencies — NASA of the US, Roscosmos of Russia, JAXA of Japan, Canadian Space Agency and the European Space Agency**.
- **Each agency has a role to play and a share in the upkeep of the ISS.** Both in terms of expense and effort, it is not a feat that a single country can support.
- Russia's part in the collaboration is the **module responsible for making course corrections to the orbit of the ISS**.
- Further, the Russian segment ensures that the **space station's orbit is corrected to keep it away from space debris, roughly 11 times a year**.
- It also ferry astronauts to the ISS from the Earth and back.

PYQ

"The experiment will employ a trio of spacecraft flying in formation in the shape of an equilateral triangle that has sides one million kilometres long, with lasers shining between the craft."

The experiment in question refers to (2020)

- (a) Voyager-2
- (b) New Horizons
- (c) LISA Pathfinder
- (d) Evolved LISA

Ans: (d)

What could be the impact of Russia's Withdrawal?

- Due to its enormous weight and the ensuing drag, the ISS **tends to sink from its orbit at a height of about 250 miles above the Earth.**
 - It has to be **pushed up to its original line of motion every now and then.**
- Russia's withdrawing from its segment of the ISS cooperation spacecraft **could affect correcting the orbit of the ISS.**
 - This meant the ISS could fall into the sea or on the land.
- ISS would likely **crash down on some country, but most probably not Russia itself.** The orbit of the ISS does not fly over Russian territory mostly.
- However, dropping of ISS poses a **greater risk to regions that are closer to the equator.** But this is only a probability, as it can move or disintegrate.
 - In case of this eventuality, people in the ISS will be brought back, modules can be detached thereby making it much smaller which will ensure that it disintegrates before touching the earth.

What is the International Space Station (ISS)?

- The ISS is the most **complex international scientific and engineering project** in history and the largest structure humans have ever put into space.
- This **high-flying satellite** is a laboratory for new technologies and an **observation platform for astronomical, environmental and geological research.**
- As a permanently **occupied outpost in outer space**, it serves as a stepping stone for further space exploration.
- The space station flies at an **average altitude of 400 kilometers above Earth.** It circles the globe every 90 min. at a speed of about 28,000 kph.
- In one day, the **station travels about the distance it would take to go from Earth to the moon and back.**
- The space station can rival the **brilliant planet Venus in brightness** and appears as a **bright moving light across the night sky.**
- It can be seen from Earth without the use of a telescope by night sky observers who know when and where to look.
- Five different space agencies representing 15 countries built the **USD 100-billion International Space Station and continue to operate it today.**
- The International Space Station was taken into space piece-by-piece and gradually built in orbit.
 - It consists of modules and connecting nodes that contain living **quarters and laboratories, as well as exterior trusses that provide structural support, and solar panels that provide power.**
 - The first module, **Russia's Zarya module**, launched in 1998.
- The first space station crews were three-person teams, though after the **tragic Columbia shuttle disaster** the crew size temporarily dropped to two-person teams.
- The space station reached its full six-person crew size in 2009 as new modules, laboratories and facilities were brought online.
- Current plans call for the space station to be operated through at least 2020. NASA has **requested an extension until 2024.**

Are there any substitutes for Russia?

- There are right now two possibilities. [SpaceX's dragon module](#) and [Boeing's Starliner](#) can dock with the ISS.
- Until SpaceX's dragon spacecraft came into the picture the Russian spacecrafts were the only way of reaching the ISS and returning.

PYQ

What is the purpose of 'evolved Laser Interferometer Space Antenna (eLISA)' project? (2017)

- (a) To detect neutrinos
- (b) To detect gravitational waves
- (c) To detect the effectiveness of missile defence system
- (d) To study the effect of solar flares on our communication systems

Ans: (b)

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