New ISRO Chairman S. Somanath

For Prelims: Indian Space Research Organisation (ISRO), Gaganyaan Mission, Small Satellite Launch Vehicle (SSLV), National Space Transportation Policy (NSTP), IN-SPACE, NewSpace India Limited (NSIL), Indian Space Association (ISpA)

For Mains: ISRO and its achievements, current issues with ISRO, Need of the domestic space law, Steps taken for Space Revolution

Why in News

Recently, S. Somanath, an eminent rocket scientist has been appointed as the **Chairman of the** Indian Space Research Organisation (ISRO) and the Space Secretary.

Major Contribution of Dr. Somanath

- He has played a major role in the development of the **Polar Satellite Launch Vehicle (PSLV)** and the **Geosynchronous Satellite Launch Vehicle Mk-III (GSLV Mk-III).**
- He joined the **GSLV Mk-III** project in 2003, and served as Project Director from 2010 to 2014.
    - He is an expert in the area of system engineering of launch vehicles.
- Later on, he contributed to the development of the indigenous **cryogenic stages for the GSLV.**

Key Points

- **ISRO:**
    - It is the pioneer space exploration agency of India, headquartered at Bengaluru.
    - ISRO was formed in 1969 with a vision to develop and harness space technology in national development, while pursuing planetary exploration and space science research.
    - ISRO replaced its predecessor, **INCOSPAR (Indian National Committee for Space Research),** established in 1962 by India's first Prime Minister Pt. Jawaharlal Nehru and scientist Vikram Sarabhai, considered amongst the founding fathers of the Indian space program.
- **Achievements of ISRO:**
    - The **first Indian satellite, Aryabhata**, was built by the ISRO and launched with the help of the Soviet Union on 19th April **1975.**
    - The **year 1980** marked the **launch of Rohini,** which was the first satellite to be successfully placed in orbit by **SLV-3, an Indian made launch vehicle.**
    - Subsequently with more efforts, two other rockets were developed by ISRO: t**he PSLV (Polar Satellite Launch Vehicle)** for placing satellites into polar orbits and the **GSLV (Geosynchronous Satellite Launch Vehicle)** for placing satellites into geostationary orbits.
        - Both the rockets have successfully launched several earth observation and

communication satellites for India as well as other countries.
    - Indigenous satellite navigation systems like **IRNSS** and **GAGAN** have also been deployed.
        - **Indian Regional Navigation Satellite System** is designed to provide accurate position information service to assist in the navigation of ships in the Indian Ocean waters.
        - **GAGAN** is India's **first satellite-based global positioning system** that relies on ISRO's GSAT satellites.
    - In January 2014, ISRO used an **indigenously built** cryogenic engine for a GSLV-D5 launch of the GSAT-14 satellite making it one of the only six countries in the world to develop a cryogenic technology.
    - Some remarkable space probes of ISRO include **Chandrayaan-1** lunar orbiter, **Mars Orbiter Mission (Mangalyaan-1)** and **ASTROSAT** **space observatory.**
        - The success of the **Mars Orbiter Mission** made India **only the fourth country in the world** to reach Martian orbit.
    - India launched **Chandrayaan-2**, its second lunar exploration mission after Chandrayaan-1 on 22nd July 2019.
- **Major ISRO achievements of 2021:**
    - **Amazonia-1:**
        - The 53rd flight of PSLV-C51 marked the first dedicated mission for **New Space India Ltd (NSIL)**, the commercial arm of ISRO.
        - Amazonia-1, the optical **earth observation satellite** of National Institute for Space Research (INPE), would provide remote sensing data to users for monitoring deforestation in the Amazon region and analysis of diversified agriculture across the Brazilian territory.
    - **UNITYsat (three satellites):**
        - They have been deployed to provide **Radio relay services.**
    - **SDSAT:**
        - Satish Dhawan Satellite (SDSAT) is a **nano satellite** intended to study the radiation levels/space weather and demonstrate long range communication technologies.
- **Upcoming Missions:**
    - **Gaganyaan Mission**: India's maiden space mission, Gaganyaan, will be launched in 2023.
    - **Chandrayaan-3 Mission**: Chandrayaan-3 is likely to be launched during the third quarter of 2022.
    - **Three Earth Observation Satellites (EOSs):**
        - **EOS-4 (Risat-1A) and EOS-6 (Oceansat-3)** — will be launched using Isro's workhorse PSLV, the third one**, EOS-2 (Microsat),** will be launched in the first developmental flight of the **Small Satellite Launch Vehicle (SSLV)**.
        - These satellites will be launched in the **first quarter of 2022.**
    - **Other:**
        - **Shukrayaan Mission**: The ISRO is also planning a mission to Venus, tentatively called Shukrayaan.
        - **Own Space Station:** India is planning to **launch its own space station by 2030,** joining the league of US, Russia, and China to an elite space club.
- **Challenges for ISRO:**
    - **Mere contribution in Global Space Economy:**
        - India accounts for **only 2% of the global space economy.**
        - The two key reasons for the same are **lack of space specific laws and effective monopoly enjoyed by ISRO** over all space-related activities.
    - **International Treaties:**
        - India's current space activities are currently governed by a few international treaties along with two national polices which are **Satellite Communication Policy (SATCOM)** and **Remote Sensing Data Policy (RSDP).**
            - SATCOM policy was introduced in 1997 and is aimed at developing the space and satellite communications industry within India.
                - In 2000, norms for the implementation of the 1997 policy were introduced.
            - The RSDP was introduced in 2001 and revised in 2011.
                - It lays down clear guidelines for the distribution of satellite remote sensing data within India and states that the GOI is the exclusive

owner of all data received from Indian Remote Sensing Satellites (IRS) to which private entities can only acquire a license through the nodal agency.

- **Not having Domestic Space Law:**
  - Up until recently, the **need for a domestic space law was not felt** as space was seen more of an international issue rather than a domestic one.
  - Furthermore, the **private sector has only recently shown willingness** to invest and play a bigger role in India's space sector after realising the potential of commercial space activity.

- **Steps taken for Space Revolution:**
  - **National Space Transportation Policy (NSTP)**
  - **IN-SPACE**
  - **NewSpace India Limited (NSIL)**
  - **Indian Space Association (ISpA)**

Way Forward

- Activities such as asteroid mining, Earth observation, space tourism, satellite launches, deep space exploration, and satellite internet will be the drivers of the new space economy.
- With its mixture of **cost-effective technology**, budding start-up culture, abundance of youth, technological know-how, and with ISRO already acting as a springboard, India has the potential to become a world leader in the global space economy.
- The government **need only be careful while framing the domestic space law** as it has the **potential to change India's future for better or for worse.**

Source:TH