



# Hope: UAE Mars Mission

## Why in News

The **United Arab Emirates (UAE) Mars Mission or 'Hope'** is scheduled for launch on 16<sup>th</sup> July, 2020.

- It is **one of three missions** launching to Mars this month. The **USA and China**, both have surface rovers in the late stages of preparation.

## Key Points

### ▪ Hope Mission:

- It is the **first interplanetary mission for the Arab World**.
- The **'Hope Orbiter'** will be lifted on an **H-IIA rocket** from Mitsubishi Heavy Industries, a machinery maker in **Japan**. It will be launched from **Tanegashima Island** in Japan.
  - The UAE does not have its own rocket industry.
- Once launched, it is expected to **arrive in orbit around Mars in February 2021** (the year of **50<sup>th</sup> anniversary of UAE's founding**).
- It costs about **USD 200 million** and will carry three instruments: an infrared spectrometer, an ultraviolet spectrometer and a camera.
- **Expected Benefits:**
  - It will give planetary scientists their **first global view of Martian weather at all times of day**.
  - Over its two-year mission, it will investigate how dust storms and other weather phenomena near the Martian surface speed or slow the **loss of the planet's atmosphere** into space.
- **Significance:** The country's primary aim is to inspire school children and **spur its science and technology industries**, which, in turn, will enable the Emirates to tackle critical issues like food, water, energy and a post-petroleum economy.
- **Previous UAE Space Missions:**
  - Has built and launched three **earth-observing satellites** in collaboration with a South Korean manufacturer.
  - In 2019, the UAE bought a seat on a **Russian Soyuz rocket** and sent its first astronaut for an eight-day stay at the **[International Space Station](#)**.

### ▪ Other Two Missions on Mars:

- **NASA's** Mars rover, **Perseverance**, with instruments to search for chemical signs of past life, is scheduled to launch on 30<sup>th</sup> July, 2020.
- **China** is also launching an ambitious mission to Mars, **[Tianwen-1](#)**.

### ▪ Reasons Behind Timing of Mars Missions:

- The timing is dictated by the opening of a **one-month window** in which **Mars and Earth are in ideal alignment** on the same side of the sun, which **minimizes travel time and fuel use**. Such a window opens only **once every 26 months**.

▪ **Existing Missions on Mars:**

- Only the **USA has successfully put a spacecraft on Mars**. Two **NASA landers** are operating on the Mars i.e. **InSight** and **Curiosity**.
- Six spacecraft that are **exploring Mars from orbit** include three from the USA, two European and one from **India (Mars Orbiter Mission)**.

▪ **Objective Behind Mars Exploration:**

- Despite being starkly different in many ways, the Red Planet has several **Earth-like features**- such as clouds, polar ice caps, volcanoes, and seasonal weather patterns.
- For ages, scientists have wondered **whether Mars can support life**. In the past few years, Mars missions have been able to discover the **possible presence of liquid water** on the planet, either in the subsurface today or at some point in its past.

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