

Small-Scale Liquefied Natural Gas (SSLNG)

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Context

India's first **small-scale liquefied natural gas (SSLNG)** unit has been inaugurated at GAIL (India) Ltd's Vijaipur complex in Madhya Pradesh.

About

- There is not any standard definition of this still globally nascent industry.
- But basically, SSLNG involves turning natural gas into liquid and moving it using different techniques on a smaller scale in comparison to the usual large operations.
- This consists of liquefying and transporting natural gas in smaller portions without the big infrastructure and processes.
- Simply put, LNG is supplied in specialized trucks and small vessels to commercial and industrial consumers in areas that aren't linked by pipelines.

SSLNG supply chain

- The SSLNG chain can start from a massive-scale LNG import terminal from where the LNG, instead of being regasified and supplied through pipelines, can be transported to customers with the aid of cryogenic avenue tankers or small vessels.
- The chain can also start at places with sufficient natural gas supply or production, wherein small liquefaction plants can be installed.
- The SSLNG unit at Vijaipur, which is GAIL's largest gas processing facility, is an

example of the latter type of location.

Need for SSLNG

- **Transportation of gas to far off regions**
 - The government has been pushing for the adoption and use of natural gas across sectors.
 - This is because natural gas is much less polluting than traditional hydrocarbons like coal and oil; it's also cheaper than oil.
 - Natural gas is seen as a key transition gas in India's journey towards green energy and future fuels.
 - It targets to grow the proportion of natural gas in its primary energy mix to 15% by 2030 from a bit more than 6% at present.
 - However, a major challenge lies in the transportation of gas to locations that aren't connected by the country's natural gas pipeline grid.
 - This problem also hinders the use of LNG directly as fuel for long-haul trucks and inter-city buses.
- **Long gestation duration of huge-scale pipeline tasks**
 - Large-scale pipeline projects that are in the works will take years to be completed; even so, last-mile delivery challenges may persist in many parts of the country.
- **New-age solution is required**
 - In this scenario, new-age solutions with rapid turnaround instances can help amplify the attainment, access, and consumption of natural gas.
 - Such a solution is obtainable by the SSLNG wherein the purchaser could regasify the LNG using small vapourisers, and then supply it to end-users
 - Where the gas is for use directly in its liquid form, it might be provided to stop-users without regasification.

Liquefied Natural Gas (LNG)

- It is natural gas that has been cooled to a liquid state for storage and shipping.
- LNG is odorless, colorless, non-toxic, and non-corrosive. It is made up of almost absolutely methane, which has much less carbon than other fossil fuels.
- LNG is typically 85–95% methane, and it produces 40% much less carbon dioxide than coal and 30% much less than oil. It also does not emit soot, dust, or particulates.

Process

- LNG is created by cooling natural gas to -161°C (-259°F), which reduces it to 1/600 of its original volume and half of the weight of water.
- The cooled gas condenses right into a liquid at close to atmospheric stress.
- The most transport stress is ready at around 25 kPa, which is 1.25 times atmospheric strain at sea level.
- LNG is loaded onto double-hulled ships for huge-volume ocean transport.

- Once the supply arrives at the receiving port, LNG is off-loaded into well-insulated storage tanks, and later re-gasified for entrance into a pipeline distribution network.

Source: The Indian Express

UPSC Mains Practice Question

Q.What is Small-Scale Liquefied Natural Gas (SSLNG)? Highlight its significance in ensuring smooth transition to green energy?(250 words)