Date – 26 October 2022

First private bio-energy plant in Punjab

Source: The Hindu
News: Punjab is witnessing the beginnings of a renewable energy revolution rooted in agriculture as the first private bio-energy plant commenced its commercial operation. Plant aims to convert agricultural waste into wealth through production of Compressed BioGas (CBG) from paddy straw.

Common practice among Punjab, Haryana and western Uttar Pradesh farmers:

- Farmers prepare fields for the next crop by burning paddy stubble and biomass in the field.
- The resultant clouds of smoke after paddy burning engulf the entire National Capital Territory of Delhi and neighboring States between October to December.
- **Outcome:** Negative environmental effects on human and livestock health.
- Current situation is that crop residue burning is spreading to the rest of the country and even among rabi crops.

Measures taken to tackle stubble burning:

- **Commission for Air Quality Management in the National Capital Region and Adjoining Areas (CAQM) framework:**CAQM had developed an action plan for the effective prevention and control of stubble burning.
- **In-situ management:** In this heavily subsidized machinery is used to incorporate paddy straw and stubble in the soil.
- The Ministry of Agriculture and Farmers Welfare started the Crop residue management (CRM) Scheme.
- **Ex-situ CRM efforts:** (a)Utilization of paddy straw for biomass power projects and co-firing in thermal power plants(b) feedstock for 2G ethanol plants(c) feed

stock in CBG plants(c) fuel in industrial boilers(d)waste-to-energy (WTE) plants(d)in packaging materials, etc.

- **Additional measures:** Monitor and enforce stubble burning ban and awareness generation campaigns.

New Study and its finding:

- NITI Aayog and FAO India explored methods to convert paddy straw and stubble into energy.
- Study aims to complement the in-situ programme through possible ex-situ uses of rice straw.
- FAO's report calls for development of crop residue supply chain in Punjab for collection, storage and final use of rice straw for production of renewable energy and other services.
- **Result of the study:** Investment of ₹2,201 crore ($309 million) needed to collect, transport and store it within a 20-day period to mobilise 30% of the rice straw produced in Punjab.This would not only reduce greenhouse gas (GHG) emissions by about 9.7 million tonnes of CO 2 equivalent and around 66,000 tonnes of PM 2.5, but also improve the earning potential of farmers.

Outcome of techno-economic assessment of energy technologies:

- Cost-effective nature of rice straw for producing CBG and pellets. Pellets can be used as a substitute of coal in thermal power plants. CBG can be used as a transport fuel.
- Rice straw production in Punjab i.e. 30% of total straw production will help in achieving the 5% CBG production target set by the Government of India scheme, "Sustainable Alternative Towards Affordable Transportation (SATAT)".
- New energy technologies can also increase local entrepreneurship, increase farmers' income and reduce open burning of rice straw.

Other benefits associated with new energy technologies:

- **Replenish soil with organic matter:** As slurry or fermented organic manure from the plant (CBG) will be used as compost.
- Reduce dependence on chemical fertilizers.
- Creation of a large value chain from paddy harvest, collection, baling, transport and handling of biomass due to installation of CBG plant will provide additional employment opportunities to rural youth.
- Initiative can change the face of the rural economy across the country due to value addition to the economy, farmers' income and sustainability through environmental benefits, renewable energy.

Way forward: Focus on 'wealth from waste' approach and circular economy.
Article: A renewable energy revolution, rooted in agriculture (Ramesh Chand, Konda Reddy Chavva)

Sharad

ISRO's heaviest rocket launches 36 satellites.

Source: The Hindu
News: Recently, ISRO' s heaviest rocket Launch Vehicle Mark 3 (LVM3 or GSLV Mark 3) placed 36 satellites in low earth orbit.

About OneWeb:

- U.K. government and India's Bharti Enterprises launched OneWeb as a joint venture.
- OneWeb partnered with NSIL and ISRO to fulfill its commitment to provide connectivity across the length and breadth of India by 2023 from Ladakh to Kanyakumari and Gujarat to Arunachal Pradesh.
- Launch Vehicle Mark 3 (LVM3 or GSLV Mark 3) successfully orbited 36 satellites of the U.K.-based OneWeb in its 14th launch, bringing the constellation to 462 satellites.
- Currently, OneWeb's connectivity solutions live in regions north of 50-degrees latitude.After this launch,OneWeb is just four satellites away to provide global satellite coverage in 2023.
- **Benefits associated with OneWeb:** Secured satellite solutions to enterprises, towns, villages, municipalities and schools, including the hardest-to-reach areas across the country.

Features of LVM3-M2 mission:

- LVM3-M2 is the dedicated commercial satellite mission.
- It is part of NewSpace India Limited (NSIL), a Central Public Sector Enterprise (CPSE) under the Department of Space, Government of India.
- LVM3-M2 mission is part of the commercial arrangement between NSIL and m/s Network Access Associates Limited (m/s OneWeb Ltd).
- ISRO's statement said that in a historic mission all the satellites got separated successfully in a slow process and the mission happened exactly as planned in the

shortest possible time. ISRO is planning to place another 36 satellites in the next M3 mission.

- Purpose of LVM3 was to launch geo-stationary satellites with payload capacity of 4T and launching 6T payloads for LEO.
- In the LVM3 mission C25 stage was handled through in-house built inertial navigation systems.

Impact of the mission: New chapter for India in the space sector.

- LVM3 mission is a great opportunity for ISRO to meet the requirements of launch vehicles.
- **High foreign direct investment in the country:** As LVM3 mission launch opens up the space sector in India for billion dollars foreign investment.
- Less execution time of mission illustrated the opportunities for satellite connectivity in India.
- Mission utilizes LEO connectivity potential to deliver broadband services across India.
- LVM3 mission exemplifies **Atmanirbharta** and enhances India's **competitive edge** in the global commercial launch service market.

Article:

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