

GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE AND TECHNOLOGY  
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

**RAJYA SABHA**  
**UNSTARRED QUESTION No. 1088**  
(TO BE ANSWERED ON. 13.02.2025)

**VEGETABLE AND LIVESTOCK WASTE**

1088 # Shri Rambhai Harjibhai Mokariya:  
Smt. Kiran Choudhry:

Will the Minister of **SCIENCE AND TECHNOLOGY** be pleased to state:

- (a) whether Council of Scientific and Industrial Research (CSIR) has developed any technology to convert vegetable and livestock waste to energy; and
- (b) if so, the details thereof and if not, the reasons therefor?

**ANSWER**

THE MINISTER OF STATE (INDEPENDENT CHARGE) OF  
SCIENCE AND TECHNOLOGY AND EARTH SCIENCES  
(DR. JITENDRA SINGH)

- (a)&(b) Yes, Sir. Constituent laboratory of the Council of Scientific and Industrial Research (CSIR) namely, Indian Institute of Chemical Technology (CSIR-IICT), Hyderabad and CSIR-National Institute for Interdisciplinary Science and Technology (CSIR-NIIST), Thiruvananthapuram have developed a (i) high-rate biomethanation technology based on “Anaerobic Gas lift Reactor (AGR)” for the conversion of organic waste into biogas and biomanure; and (ii) Solid-State Anaerobic Digestion Technology for recovering bioenergy (biogas) from organic wastes, including vegetable waste respectively.

There are about 32 biogas plants based on CSIR-IICT technology for various organic wastes (food waste: 23; market and vegetable waste: 6; organic fraction of MSW and MSW leachate: 2; slaughter waste: 1) installed across the country in 11 states with plant sizes ranging from 150kg/day to 10TPD, where the biogas is utilized for LPG as well as grid power replacement. AGR technology presence is seen in the vegetable market yards in Telangana (Erragadda - 500 kg/day), Baatasingaram – 500 kg/day, Kukatpally–500 kg/day, Gudimalkapur–5 TPD) and AP (Kurnool – 500 kg/day). The technology is demonstrated and proven successful for poultry litter and it could be applied for livestock waste as well.

CSIR-NIIST’s Solid-State Anaerobic digestion technology is a unique scalable technology having a compact size with no fresh water consumption, offers more biogas yield and having less discharge slurry. The discharge slurry is a fermented organic manure (replacement for chemical fertilizer). The discharge slurry is free from any foul smell, and the process can handle any food waste.

The technology is already licensed to four companies and many field units are operational. The significant installations include International Airport Trivandrum (500 kg/day), Durg district Chhattisgarh (200 kg/day), RBI unit Trivandrum (50 kg/day) and Hospitals (50kg/day) etc.

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