

**GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE & TECHNOLOGY  
DEPARTMENT OF BIOTECHNOLOGY**

**LOK SABHA  
STARRED QUESTION NO. \*276  
TO BE ANSWERED ON 06/12/2019**

**BIO-ENERGY FROM WASTE**

\*276. SHRI DUSHYANT SINGH:

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

- (a) the details of Research and Development work done by the Government for generating bio-energy from the Municipal Solid Waste (MSW) and Municipal Liquid Waste (MLW);
- (b) whether the Government has achieved any progress in developing cost-effective bio-fuels, enzymes/ micro-organisms for higher yield of bio-fuels, advance bio-fuels and value added products from by-products;
- (c) if so, the details thereof;
- (d) whether the Government is working on a pilot project to generate bio-energy from waste in garbage landfills; and
- (e) if so, the details thereof along with the potential and opportunities to scale-up generation of bio-energy from garbage landfills?

**ANSWER**

**MINISTER OF SCIENCE & TECHNOLOGY, EARTH SCIENCES AND H&FW  
(DR. HARSH VARDHAN)**

(a) to (e) A statement is laid on the Table of the House.

\*\*\*\*\*

STATEMENT IN RESPECT OF LOK SABHA STARRED QUESTION NO. \*276 FROM SHRI DUSHYANT SINGH TO BE ANSWERED ON 06/12/2019 REGARDING "BIO-ENERGY FROM WASTE"

(a) The Government of India has supported R&D projects and demonstration activities under "Swachh Bharat Mission" across the country for developing and demonstrating technologies for sustainable utilization of municipal solid waste (MSW) and municipal liquid waste (MLW) for generating bio-energy in the form of biogas, bio-fuels, by-products etc. using smart combination of chemical and biological technologies.

- In addition, R&D projects for technology development are also being supported at different research Institutions, Universities, Start-ups and Small and Medium Enterprises.
- Three demonstration projects have been supported at DBT-ICT Center, Mumbai, Birla Institute of Technology and Science (BITS) Goa and Indian Institute of Chemical Technology, Hyderabad.
- DBT-ICT Centre for Energy Biosciences, Mumbai is implementing R&D programme for generating bio-energy from the Municipal Solid Waste (MSW) and Municipal Liquid Waste (MLW).

(b) & (c) Substantial leads have been achieved in developing cost effective bio-fuels, enzymes/ microorganisms for higher yield of bio-fuels and value added products from by-products through R&D interventions of Government. Some of the important leads are as follows:

- An integrated 2G ethanol technology with onsite enzyme production has been developed at pilot scale from agricultural biomass such as rice straw, wheat straw and bagasse.
- The first indigenous enzyme technology has been developed for pretreatment of different biomass for 2G ethanol production. The technology now has been transferred to an oil marketing company for setting up of a commercial scale plant.
- Technology for production of value added products such as lactic acid, levulinic acid, Poly hydroxyl alkanoids (PHA) from the by-products of 2G ethanol process has been developed.
- Wastewater treatment technology using microalgal biomass to produce bio-crude oil has been developed.

(d) & (e) No such proposal to generate bio-energy from waste in existing garbage landfills is under consideration.