

GOVERNMENT OF INDIA
MINISTRY OF NEW AND RENEWABLE ENERGY
LOK SABHA
UNSTARRED QUESTION NO. 905
TO BE ANSWERED ON 28.04.2016

R&D OF HYDROGEN AND FUEL CELLS

905. SHRI SUNIL KUMAR SINGH:

Will the Minister of New and Renewable Energy be pleased to state:

- (a) the details of projects being implemented for the research and development of hydrogen and fuel cells in the country, State-wise;
- (b) whether the Government proposes to set up hydrogen fuel centres in the country;
- (c) if so, the details of locations on which these centres are proposed to be set up; State-wise; and
- (d) the reasons for not setting up hydrogen fuel centre in Jharkhand?

ANSWER

THE MINISTER OF STATE FOR POWER, COAL & NEW AND RENEWABLE ENERGY
(INDEPENDENT CHARGE) (SHRI PIYUSH GOYAL)

(a): Twenty five R&D projects on hydrogen and fuel cells are presently under implementation with the support of the Ministry at academic institutions, research organisations and industry. Details are given in Annexure.

(b), (c) & (d): No, Madam. The Government is not proposing to set up hydrogen fuel centre in the country including in the State of Jharkhand, at present. However, Indian Oil Corporation Limited R&D Centre, Faridabad has developed a proposal for setting up a Centre of Excellence for Hydrogen Energy and Fuel Cells in the campus of the National Institute of Solar Energy at Gwalpahari, Gurgaon, Haryana.

ANNEXURE**Annexure referred to in reply to Part (a) of Lok Sabha Unstarred Question No. 905
for answer on 28.4.2016 regarding "R&D of Hydrogen and Fuel Cells"**

Sl. No.	Name of the Project	Implementing Agency	Total Project Cost (Rs.)
1.	Hierarchical composite nano-structure photo-catalysts for efficient water splitting under solar light irradiation	Yogi Vemana University, Kadapa, Andhra Pradesh	72,18,800/-
2.	Development of Bio-electrodes for Biofuel Cell	Indian Institute of Technology Guwahati, Assam	33,72,600/-
3.	Design of Electrolytic Cell for economic and energy efficient bio-hydrogen production from leafy biomass by electro-hydro-genesis	National Institute of Technology, Raipur, Chhattisgarh	37,61,460/-
4.	Mission mode project on development and demonstration of hydrogen fuelled internal combustion engines for vehicles	Indian Institute of Technology Delhi, Delhi	12,74,58,000/-
5.	Development and demonstration of hydrogen fuelled multi cylinder spark ignition engine generator set for stationary power generation	Indian Institute of Technology Delhi, Delhi	81,79,329/-
6.	Demonstration and field trials of hydrogen fuelled 3-wheelers in New Delhi	Indian Institute of Technology Delhi, Delhi	4,82,39,808/-
7.	Development of hydrogen refueling facility for demonstration of fuel cell vehicles	R&D Centre, Indian Oil Corporation Ltd., Faridabad, Haryana	10,89,00,000/-
8.	Demonstration and performance evaluation of various technologies of hydrogen energy at the National Institute of Solar Energy, Gwalpahari, Gurgaon, Haryana	National Institute of Solar Energy, Gwalpahari, Gurgaon, Haryana	86,65,000/-
9.	Hydrogen generation using biomass gasification for fuel cell application	Indian Institute of Science, Bengaluru, Karnataka	4,78,81,000/-

10.	Investigation on bio-hydrogen production by thermo-chemical method in fluidized bed gasifier under catalytic support and its utilization	National Institute of Technology Calicut, Kozhikode, Kerala	35,73,450/-
11.	Development of efficient hydrogen supply system through liquid organic hydrides	National Environmental Engineering Research Institute, Nagpur, Maharashtra	5,81,00,000/-
12.	Design & development of porous graphene modified metal oxide photo anode for electro-chemical water splitting	Shiksha 'O' Anusandhan University, Bhubaneswar, Odisha	64,81,200/-
13.	Development of platinum free hybrid electro-catalyst based on nano-structured metal particles and graphene for fuel cell application	Institute of Minerals and Materials Technology, Bhubaneswar, Odisha	57,40,000/-
14.	Development and demonstration of diesel hydrogen dual fuel SUV	Mahindra & Mahindra Ltd., Chengalpattu, Tamil Nadu	9,68,03,000/-
15.	Design & development of solar light driven graphene based mixed oxide photo catalysts for efficient production of hydrogen (Solar fuel)	SRM University, Kattankulathur, Chennai, Tamil Nadu	41,08,060/-
16.	Mission mode project on hydrogen storage in carbon materials	Indian Institute of Technology Madras, Chennai, Tamil Nadu	5,81,68,000/-
17.	Titania nanotube as alternate catalyst support for direct methanol fuel cells	Indian Institute of Technology Madras, Chennai, Tamil Nadu	52,12,000/-
18.	Transformation of greenhouse gases into clean fuels by low temperature plasma catalysis	Indian Institute of Technology Hyderabad, Yudumailaram, Telangana	78,66,000/-
19.	Amidophosphine borane as potential source for hydrogen – an experimental and computational approach	Indian Institute of Technology Hyderabad, Yudumailaram, Telangana	37,81,800/-
20.	Research on Metal Organic Frameworks (MOFs) : Searching of paradigms for selective and reversible hydrogen storage at ambient and near ambient temperatures	Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh	62,40,000/-
21.	Mission mode project on hydrogen storage materials (Hydrides): R&D	Banaras Hindu University, Varanasi, Uttar Pradesh	10,90,14,000/-

22.	Development of design methodology for light weight high pressure hydrogen storage composite cylinder for vehicular applications	Central Mechanical Engineering Research Institute, Durgapur, West Bengal	18,00,000/-
23.	Bio inspired catalysts for the reversible conversion $H^+ + e^- \rightarrow \frac{1}{2} H_2$	Indian Association for the Cultivation of Science, Kolkata, West Bengal	99,90,000/-
24.	Maximisation of gaseous energy recovery from organic wastes through bio-hythane process	Indian Institute of Technology Kharagpur, Kharagpur, West Bengal	48,12,000/-
25.	Mission mode project on hydrogen production through biological routes	Indian Institute of Technology Kharagpur, Kharagpur, West Bengal	6,08,05,400/-