GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

LOK SABHA
UNSTARREDQUESTION NO.1212
TO BE ANSWERED ON 06.12.2021

Emission of CO_2

1212. SHRI MANOJ TIWARI:
SHRI VISHNU DATT SHARMA:

Will the Minister of ENVIRONMENT, FOREST AND CLIMATE CHANGE be pleased to state:

(a) whether the Government has made a national level assessment of CO_2 emission and if so, the period thereof and the estimated emission for 2020;
(b) the actions taken for carbon capture and storage and the progress made so far;
(c) whether there is any plan to use the saved carbon for economic and industrial purpose and if so, details of the same and the time-bound plan for this;
(d) whether the Government has included carbon sequestration as a major policy in decarbonisation of India's energy, electricity and manufacture industries and if so, the details thereof and the plan and timelines for same;
(e) whether the government would make available data on produced CO_2 both from oil and gas fields and from industrial processes; and
(f) whether the Government is considering any program on Seagrasses as they are very efficient for their CO_2 sequestration and ecosystem stabilization capabilities and if so, the details thereof and if not, the reasons therefor?

ANSWER

MINISTER OF STATE IN THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE
(SHRI ASHWINI KUMAR CHOUBEY)

(a) to (e)As a Party to the United Nations Framework Convention on Climate Change (UNFCCC),India periodically submits its National Communications (NCs) and Biennial Update Reports (BURs) to the UNFCCC which includes national Greenhouse Gas (GHG) inventory. As per India's third BUR submitted to the UNFCCC in February 2021, total GHG emissions, excluding Land Use Land-Use Change and Forestry (LULUCF) in 2016were 2,838.89 million tonne CO_2e and 2,531.07 million tonne CO_2e with the inclusion of LULUCF. India's total GHG emission also includes CO_2 emissions from oil & gas sector and industrial processes and product use (IPPU) sector. The emissions based on India's first, second and third BURs are as following:

Sr. No.	Year	Total GHG emission (without LULUCF) (milliontonne CO_2e)	Net GHG emission (With LULUCF) (million tonne CO_2e)	CO_2 emission (million tonne)	CO_2 emission from oil & gassector (million tonne)	CO_2 emission from Industrial Processes and Product Use Sector (million tonne)
1.	2010	2137	1884	1574	42	132
2.	2014	2607	2306	1998	50	153
3.	2016	2839	2531	2231	72	166

Further, according to a research study carried out by the Indian Space Research Organisation using observations of Orbiting Carbon Observatory satellites of NASA, total column atmospheric CO_2 concentration over representative sites of India during January 2020 to June 2021 was found to vary on daily basis from approximately 406.3 on 31 August 2020 ppm to 416.1 ppm on 28 April 2021.

Carbon Capture, Utilization, and Storage (CCUS) is an emerging area of research. Its efficacy is yet to be fully established in terms of techno-economic feasibility. The Department of Science and Technology (DST) works in the area of CCUS through emphasis on research and development and capacity building of both human resource and infrastructure to evolve appropriate technologies and methodologies.The Department of Science and Technology and Department of Biotechnology in 2018,had launched a Joint Funding Opportunity Announcement (FOA) for inviting proposals on Innovation Challenge on CCUS under the multilateral Mission Innovation (MI)initiative to undertake joint Research & Development with MI member countries to identify and prioritize breakthrough technologies in the field of CCUS.DST has supported 19 CCUS R&D projects during last three years.DST also participated in the Accelerating CCUS Technologies collaboration Programme for adopting the global practices and accessing transnational research for the transfer of CCUS technologies.

As a developing country Party under the UNFCCC and its Paris Agreement, India is not required to undertake decarbonization of any sector, in keeping with the principle of equity and in accordance with the principle of common but differentiated responsibilities and respective capabilities. However, India is committed to development along a low-carbon pathway while maintaining its commitment to sustainable development. To meet this objective, India has undertaken a number of programmes, initiatives, schemes and other steps. Through the National Action Plan on Climate Change (NAPCC) and its various National Missions, India is addressing climate change mitigation and adaptation across a range of sectors. Installed capacity of solar energy in India has increased by more than 18 times from 2.63 GW in March 2014 to 47.66 GW in October 2021. As a result, India's current share of non-fossil sources based installed capacity of electricity generation is more than 40%.Under Unnat Jyoti by Affordable LEDs for All (UJALA) scheme, a total of 36.78 crores LED bulbs have been distributed to enhance energy efficiency. Perform Achieve and Trade (PAT) scheme for energy efficiency in industries and other energy-intensive sectors resulted in total savings of approximately 13.28 million tons of oil equivalent, translating into 61.34 $MtCO_2$ of avoided emissions in the PAT Cycle II. Forest and tree cover has increased by 13031 km^2 between the 2015 and 2019 assessments of the Forest Survey of India. Forest and tree cover sequestered 331 $MtCO_2$ in 2016 which is around 15% of total carbon dioxide

emissions occurring in the country. India's LULUCF sink (CO_2 removal) is on the rise by 3.4% between 2014 and 2016 and by approximately 40% between 2000 and 2016.

India is making every effort to decouple its growth from emissions, by steadily lowering the emissions intensity of its GDP over the years. This keeps India's GHG emissions below what would otherwise have been emitted. It is important to emphasize that there is no sector of India's economy and no aspect of its economic life that is untouched by concern to keep to a low-carbon development pathway.

(f) Based on field surveys and satellite data, the National Centre for Sustainable Coastal Management has estimated the total extent of seagrass ecosystem in India to be 516.59 km^2. The CO_2sequestration rate of seagrass ecosystem is estimated to be up to 434.9 tonnes/km^2/year with an annual net CO_2 sink of 0.75 million tonnes for an area of 517 km^2.

Further, the Government has also initiated a project across the States of Andhra Pradesh, Maharashtra, and Odisha on Enhancing climate resilience of India's coastal communities at a total cost of US $130.269 million which includes a grant of US$ 43.419 million by Global Climate Fund (GCF) covering 24 ecosystems in these selected States which aims to strengthen the climate resilience of coastal communities by protecting and restoring India's natural ecosystems such as mangroves and seagrass.

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