<u>Reply to Parliament Question No 6097 for 13.03.2025 for Lok Sabha regarding "Steps Taken to Reduce India's Dependence on Crude Oil Imports" in respect of Numaligarh Refinery Limited (NRL):</u>

Q no. (a): **the steps being taken to reduce India's dependence on crude oil imports;**

Reply: Ministry to reply.

[NRL is executing a bio-refinery project in the state of Assam through its Joint Venture Company Assam Bio Ethanol Pvt. Limited (ABEPL). NRL owns 50% share in the company and remaining 50% equity is shared between two M/s Fortum BV3 and M/s Chempolis. M/s Chempolis is also the technology provider for the bio-refinery. Bio-refinery will produce 50 TMTPA of Advance bio-fuel (ethanol) from 300 TMTPA of dry bamboo. The first trial run has been conducted successfully to establish conversion of bamboo to alcohol. During the trial run, bamboo was successfully processed through the digestor, bamboo washing section, enzymatic hydrolysis and fermentation sections. The 2G bio-ethanol project at Numaligarh is set to become fully operational by the first quarter of 2025-26. It is envisaged that Ethanol will substitute petrol to the same extent and thereby reduce import of crude required for production of petrol in the country.

Further, in line with all oil and gas industries, NRL developed a Net Zero roadmap during 2022 with project plan, timeline and project costs as a guiding document to achieve net zero carbon emissions by the year 2038 with regards to scope 1 & scope 2.

Accordingly, company is gauging the carbon emissions YoY and has braced up with multiple projects involving low carbon, green, alternative and renewable energy technologies namely CO to acetic acid; green Hydrogen; SAF; waste ammonia recovery; Solar PV rooftops; RERTC (Renewable energy Round the clock) by integrating renewable energy into the refinery's power mix, alongside massive plantation drive.]

Q no. (b): **the manner in which the Government ensures stability in fuel prices amidst fluctuations in global crude oil prices;**

Reply: Ministry to reply.

Q no. (c): **the manner in which the Government is addressing environmental concerns related to oil and gas extraction and refining;**

Reply: Ministry to reply.

Q no. (d): **the role of the petroleum sector in achieving India's net-zero emissions target by 2070; and**

Reply: Ministry to reply.

[NRL has developed a strategic roadmap to guide the achievement of net zero greenhouse gas (GHG) emissions for scope 1 and scope 2. The NRL aims to reduce emissions from an anticipated 3.4 million tons of CO_2e (expected after reaching a processing capacity of 9 million tons by 2026-27) to net zero by 2038.

The following initiatives are taken by NRL to reduce GHG emission and achieve net zero:

i. **Afforestation**: NRL has taken-up following flagship initiatives of tree plantation in Assam and other state:
   a. 1,00,000 saplings in 40 ha. land at Nakkati Chapori, Golaghat District, Assam.
   b. 68000 saplings in 35 ha. land at Kandoli PRF, Nagaon District. Assam.
   c. 3,50,000 saplings in 28 Ha. land in Abhoypur Village, Dibrugarh District Assam.
   d. Development and construction of 3 nos. Bamboo Nurseries in Assam to generate 60 lakh bamboo saplings to be planted in in three yrs.
   e. NRL has participated in the Green Credit Programme (GCP) notified on 13th October,2023 by MoEF&CC. A 55 ha of land parcel has been registered in Nawada, Bihar under the GCP, for planting 60,500 no. of trees in the degraded land. Plantation will start in next 1-2 month.

   The tree plantation in above mentioned plots already been completed. NRL would take maintenance of the forest for a period spanning 5 years. The afforestation as mentioned above will generate a carbon sink of about 0.26 million ton of CO_2 equivalent per year.

ii. **Green H2 Projects:**
   a. NRL is setting up a 2.4 KTPA green hydrogen plant on EPC basis, which is targeted to be commissioned by June 2025. WO awarded to Greenko ZeroC and job is under progress.
   b. NRL has floated a tender to set up a 10 KTPA Green hydrogen on BOO (Build, Own and Operate) basis and to supply Green Hydrogen for use in refinery, under SIGHT 2B scheme of MNRE.
      Total CO_2 emission reduction from above two green hydrogen project shall be about 0.124 MMTPA.
   c. Green H2 generation capacity shall be increased in future, by setting – up more unit s of green H2, to replace the grey H2.

iii. **CCUS projects:**
   a. It is planned to set -up a CO plant of capacity 400 MT/day using SMR gas from existing HGU. DFR for the same is under preparation. The CO_2 present in the SMR gas shall be captured from the SMR gas as part of the new CO plant. Approximately 260 TPD CO_2 shall be captured. The CO_2 captured will be utilized by Oil India Limited for EOR activity in their crude oil exploration site.

b. More projects based on suitable technology /process of CCUS, shall be selected after the study, for capturing CO2 from flues gases/process gases and implemented.

iv. **Use of RE Power:** RE power shall be purchased through PPA and received through Grid in refinery power mix in the upcoming NREP (target to be commissioned by Dec.2025). It is targeted to use about 60 MW of RE power by 2030 which will reduce about 0.34 MMTPA of equivalent CO2. The consumption of RE power in the refinery power mix shall be further increased in future.

v. **Replacement of FO to FG in existing refinery:** FO consumed in furnaces of existing unit shall be replaced by NG by modification of burners.

vi. **Energy Efficiency Improvement:** Energy efficiency study is being carried out to identify new projects to improve efficiency and reduce emission.

NRL has set targets to achieve Net Zero by year 2038.]

Q no. (e): **whether any agreement has been signed with any countries on joint exploration of crude projects, if so, the details thereof?**

Reply: Ministry to reply.

[NRL has not signed any agreement with any countries on joint exploration of crude projects.]

Note for Supplementary:

Numaligarh Refinery Limited (NRL) is a Public Sector Enterprise with a 3.0 MMTPA petroleum refinery at Numaligarh in Golaghat district of Assam. Present shareholding pattern of NRL is Oil India Limited (OIL) – 69.63%, Govt. of Assam (GoA) – 26% and Engineers India Ltd (EIL) – 4.37%.

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