

(b) ISRO has drawn out a roadmap of lunar exploration missions to master the technologies required. This roadmap has been presented to the space commission. Based on the final analysis and recommendations of the expert committee, work on future lunar missions is progressing.

(c) The expert committee has analyzed the flight data and extensive simulations were carried out to re-construct the flight behavior. The recommendations of the expert committee will be implemented in future lunar missions.

Commercial exploitation of space research and development

612. SHRI MANISH GUPTA: Will the PRIME MINISTER be pleased to state:

(a) the name and objectives of the new company to commercially exploit the research and development work carried out by the Indian Space Research Organisation (ISRO) and its constituent units, the details thereof;

(b) whether private industry in the country would benefit from the initiatives taken, if so, the details thereof;

(c) the details of spin-off technologies and products which can be marketed in India and abroad; and

(d) whether Government could earn substantial foreign exchange through sale of these products abroad, if so, the details thereof?

THE MINISTER OF STATE IN THE DEPARTMENT OF SPACE (DR. JITENDRA SINGH): (a) A new company by name, "New Space India Limited (NSIL)", has been incorporated on 06th March 2019, as a wholly owned Government of India Undertaking/ Central Public Sector Enterprise (CPSE), under the administrative control of Department of Space (DOS) to commercially exploit the research and development work of Indian Space Research Organisation (ISRO).

Mandate of NSIL includes *viz.* (i) Small Satellite technology transfer to industry wherein NSIL will obtain license from DOS/ISRO and sub-license it to industries; (ii) Manufacture of Small Satellite Launch Vehicle (SSLV) in collaboration with Private Sector; (iii) Productionisation of Polar Satellite Launch Vehicle (PSLV) through Indian Industry; (iv) Productionisation and marketing of Space based services, including launch and application; (v) Transfer of technology developed by ISRO Centres and

constituent institutions of DOS; (vi) Marketing of spin-off technologies and products, both in India and abroad; and (vii) Any other subject which Government of India deems fit.

(b) Yes, Sir. With the activity plan and the mandate set for NSIL, Indian industries are likely to see a major spur in their growth in the space sector. This initiative would further enable scaling up the manufacturing and production base in Indian industries towards meeting the growing needs of Indian space programme and exploiting the opportunities available in the global space market.

(c) All the involved technologies related to ISRO's small satellite and its sub-systems that could be transferred to Indian industries for productionisation which eventually would cater to national demand as well as commercial needs of domestic and global market. This activity is also likely to give rise to several spin-off technologies that could be marketed nationally and globally.

(d) Yes, Sir. Through the sale of products related to small satellite, sub-system technology and the spin-off products in domestic and global market, foreign exchange revenue will be generated.

Technology transfer of Li-ion Cell developed by ISRO

613. SHRI SHAMBHAJI CHHATRAPATI: Will the PRIME MINISTER be pleased to state:

(a) whether ISRO has developed an in-house Li-ion Cell Technology and had invited domestic industries to establish production facilities within the country in June, 2018;

(b) if so, the details thereof;

(c) what has been the response of domestic industries on the offer of ISRO; and

(d) how efficient is the ISRO technology in comparison to the best technology available globally?

THE MINISTER OF STATE IN THE DEPARTMENT OF SPACE (DR. JITENDRA SINGH): (a) Yes, Sir.