



**PARLIAMENT OF INDIA
RAJYA SABHA**

**DEPARTMENT-RELATED PARLIAMENTARY STANDING COMMITTEE
ON SCIENCE AND TECHNOLOGY, ENVIRONMENT, FORESTS AND
CLIMATE CHANGE**

THREE HUNDRED FORTY SEVENTH REPORT

**DEMANDS FOR GRANTS (2021-2022) OF THE
MINISTRY OF EARTH SCIENCES
(DEMAND NO. 23)**

(Presented to the Rajya Sabha on 8th March, 2021)
(Laid on the Table of Lok Sabha on 8th March, 2021)



**Rajya Sabha Secretariat, New Delhi
March, 2021/ Phalguna, 1942 (Saka)**

Website : <http://rajyasabha.nic.in>
Email: rsc-st@sansad.nic.in

**PARLIAMENT OF INDIA
RAJYA SABHA**

**DEPARTMENT-RELATED PARLIAMENTARY STANDING COMMITTEE
ON SCIENCE AND TECHNOLOGY, ENVIRONMENT, FORESTS AND
CLIMATE CHANGE**

**THREE HUNDRED FORTY SEVENTH REPORT
DEMANDS FOR GRANTS (2021-2022) OF THE
MINISTRY OF EARTH SCIENCES
(DEMAND NO. 23)**

**(Presented to the Rajya Sabha on 8th March, 2021)
(Laid on the Table of the Lok Sabha on 8th March, 2021)**



**Rajya Sabha Secretariat, New Delhi
March, 2021/ Phalguna, 1942 (Saka)**

CONTENTS

	PAGES
1. COMPOSITION OF THE COMMITTEE	(i)
2. INTRODUCTION	(ii)
*3. ACRONYMS	
4. REPORT	1-11
*5. RECOMMENDATIONS/OBSERVATIONS-AT A GLANCE	
*6. MINUTES	

** To be appended*

COMPOSITION OF THE COMMITTEE
(2020-21)
(Constituted w.e.f. 13th September, 2020)

1. Shri Jairam Ramesh – **Chairman**

RAJYA SABHA

2. Shri Anil Baluni
3. Shri R.S. Bharathi
4. Shrimati Vandana Chavan
5. Shri Hishey Lachungpa
6. Shri Parimal Nathwani
7. Shri Bhaskar Rao Nekkanti
8. Shri Ashwini Vaishnaw
9. Shri Binoy Viswam
10. [@]Shrimati Seema Dwivedi

LOK SABHA

11. Shri Guharam Ajgalley
12. Shri Pradan Baruah
13. Shri E.T. Mohammed Basheer
14. Shri Jashvantsinh Sumanbhai Bhabhor
15. Shri Sudarshan Bhagat
16. Shri Anantkumar Hegde
17. Shri S. Jagathrakshakan
18. Shri Mohammed Azam Khan
19. Shrimati Jyotsna Charandas Mahant
20. Dr. Swami Sakshiji Maharaj
21. Shri Asaduddin Owaisi
22. Dr. Ranjan Singh Rajkumar
23. Shri Kotha Prabhakar Reddy
24. Dr. Jayanta Kumar Roy
25. Shrimati Satabdi Roy (Banerjee)
26. Shri Mahesh Sahoo
27. Shri Francisco Sardinha
28. Shri Anurag Sharma
29. Shri Ram Shiromani
30. Shri Kirti Vardhan Singh
31. Dr. Ramapati Ram Tripathi

SECRETARIAT

Shri Pradeep Chaturvedi, Joint Secretary
Shri T. N. Pandey, Director
Shri Rakesh Anand, Additional Director
Shri Rajiv Saxena, Under Secretary
Shri Harish Kumar, Committee Officer

@ Nominated w.e.f. 23rd December, 2020, in lieu of Shri Ravi Prakash Verma who ceased to be a member of the Committee on expiry of his term in Rajya Sabha on 25th November, 2020.

INTRODUCTION

I, the Chairman of the Department-related Parliamentary Standing Committee on Science and Technology, Environment, Forests and Climate Change, having been authorised by the Committee to present the Report on its behalf, present this Three Hundred Forty Seventh Report of the Committee. This Report deals with the detailed Demands for Grants (2021-2022) of the Ministry of Earth Sciences (Demand No.23).

2. In the meeting of the Committee held on 18th February, 2021, the Secretary and other officers of the Ministry of Earth Sciences gave an overview of the various activities of the Ministry and the Members sought clarifications on various aspects of the performance of the Ministry to enable it to scrutinise the Demands for Grants.

3. The Committee expresses its thanks to the officers of the Ministry of Earth Sciences for replying to the clarifications sought by the Members and placing before it the required material to enable the Committee to scrutinise the Demands for Grants of the Ministry.

4. The Committee considered and adopted the draft report in its meeting held on the 4th March, 2021.

NEW DELHI;
March 4, 2021
Phalguna 13, 1942 (Saka)

(JAIRAM RAMESH)
Chairman,
Department-related Parliamentary Standing Committee on Science
and Technology, Environment, Forests and Climate Change,
Rajya Sabha.

REPORT

The Department-related Parliamentary Standing Committee on Science and Technology, Environment, Forests and Climate Change considered the Demands for Grants (2021-22) of the Ministry of Earth Sciences in its meeting held on 18th February, 2021.

2. BUDGETARY DETAILS FOR THE FINANCIAL YEAR 2020-21 AND ALLOCATION FOR 2021-22

2.1 The following table presents the overall budgetary details for the year 2020-21 and allocation made for the year 2021-22 in respect of the Ministry of Earth Sciences:-

(₹ in crore)

Sl. No.	Name of the Scheme	BE 2020-21	RE 2020-21	Actual Expenditure 2020-21 (till 31.01.2021)	BE 2021-22 (Allocated)
(A) Central Sector Schemes					
1.	Ocean Services, Modelling Application, Resources and Technology (O-SMART)	567.00	238.50	219.15	436.17
2.	Polar Sciences & Cryosphere (PACER)	125.00	110.00	89.29	115.00
3.	Research Education and Training Outreach (REACHOUT)	85.00	35.00	27.86	60.00
4.	Atmosphere & Climate Research-Modelling Observing Systems & Services (ACROSS)	440.00	227.90	182.49	460.00
5.	Seismological & Geosciences (SAGE)	120	39.00	25.37	110.00
	Total	1,337.00	650.40	544.16	1181.17
(B) Autonomous Bodies					
1.	Indian National Centre for Ocean Information Services (INCOIS)	26.50	22.60	17.92	24.50
2.	National Institute of Ocean Technology (NIOT)	51.51	43.00	34.75	49.25
3.	National Centre for Polar and Ocean Research (NCPOR)	24.79	21.72	21.01	24.00
4.	Indian Institute of Tropical Meteorology (IITM)	78.00	83.42	72.92	84.25
5.	National Centre for Earth Science Studies (NCESS)	21.00	12.50	8.90	16.00
	Total	201.80	183.24	155.5	198.00

Sl. No.	Name of the Scheme	BE 2020-21	RE 2020-21	Actual Expenditure 2020-21 (till 31.01.2021)	BE 2021-22 (Allocated)
(C) Establishment Expenditure of the Centre					
1.	Oceanographic Survey (ORV & FORV) and Marine Living Resources (MLR)	35.00	9.00	9.00	25.00
2.	National Centre for Medium Range Weather Forecasting (NCMRWF)	13.20	10.60	9.33	12.80
3.	Secretariat Economic Services - MoES (HQ)	35.00	29.26	24.65	33.00
4.	Secretariat Economic Services - DAO (O/o CA)	9.00	6.60	5.55	9.00
5.	Meteorology (IMD)	439.00	410.90	373.67	438.16
	Total	531.2	466.36	422.2	517.96
	Total (A+B+C)	2,070.00	1,300.00	1,121.86	1,897.13

2.2 The Committee notes the drastic reduction in the overall budgetary allocation of the Ministry in the year 2020-21. Against ₹2,070 crore in BE 2020-21, only ₹1,300 crore was allocated at RE stage, registering a steep reduction of ₹770 crore which is about 37% reduction in the overall budgetary support made available to the Ministry for the year 2020-21.

2.3 The Committee notes that the Ministry, under its Capital Budget, was allocated ₹74.90 crore in RE 2020-21 against the budgetary allocation of ₹172 crore in BE 2020-21. The Committee further notes that the Ministry has been given ₹163 crore in BE 2021-22 which is ₹57.79 crore more than the actual expenditure of ₹105.21 crore during the year 2019-20 in the same category. The Committee urges the Department to complete all its programme/projects envisaged for the year 2021-22, and fully utilise the allocation of ₹172 crore in BE 2020-21, especially since the trend of the last several years even before COVID-19 pandemic has been of actual expenditure being lower than the revised estimates.

2.4 The Committee observes that though the Department utilise ₹1,121.86 crore till January, 2021 against ₹1,300 crore in RE 2020-21 which is 86.29%

utilisation, however, the utilisation of funds in terms of BE 2020-21 allocation of ₹2070 crore has only been to the tune of 54.19%.

2.5 Responding to a query of the Committee about the impact of COVID-19 on the budgetary allocations of the Ministry during 2021-22, the Ministry submitted that as per the directions of Ministry of Finance, the overall expenditure was reduced to 5% of the BE per month during April-September, 2020, which was approximately ₹103.50 crore including ₹38 crore for salaries. Thus, the remaining funds were insufficient to carry out any major scientific activity. The funds were barely enough to manage the day-to-day expenditure of the institutes, the maintenance and warranty of the existing observational network and equipment and salaries of contractual staff. The operation and maintenance of vessels also could not be undertaken. Vessels have been instructed to be berthed outside the ports to save costs. The expedition to Arctic and Southern Ocean could not be undertaken. Procurement of AMS system costing to ₹52 crore for geochronology facility had to be postponed. Similarly, augmentation of 35 seismological network and upgradation of old seismic data acquisition systems had also to be postponed. No new research proposals were funded. The BE was further cut down to ₹1300 crore at the RE stage. Thus, a major cut of ₹770 crore further hindered initiating any new scientific activity for want of funds. Only salaries were paid and absolutely required maintenance works were taken up.

2.6 Secretary, Ministry of Earth Science, while making a presentation before the Committee in its meeting, also apprised the Committee that about 50% of the budget was spent on salaries, core grants and electricity bills and 50% of BE was available for implementation of Schemes. It was brought to the notice of the Committee that the Ministry did not make any new procurement in the year 2020-21. Expeditions to Arctic and South Indian Ocean were also stopped due to inadequate funds.

2.7 On the basis of the information furnished by the Ministry, the Committee observes that the worst hit area in terms of reduction in the budgetary allocation has been the ‘Central Sector Schemes’ where the budgetary allocation of

₹1,337 crore in BE 2020-21 was reduced to ₹650.40 crore registering a massive cut of ₹686 crore, i.e. more than 50% decrease in the funds. The Committee, however, understands the unprecedented challenges due to the COVID-19 pandemic, and thus required extraordinary management of the resources available with the Government of India. The cut in the overall budgetary allocation of the Ministry is as high as 37%. The resilience shown by the Ministry to manage its resources and continue its critical services related to weather, climate, ocean and seismology without any interruptions/discontinuation, is commendable.

2.8 The Committee further notes that the Ministry has allocated ₹1897.13 crore in BE 2021-22 against its projected/proposed demand of ₹3288.02 crore. Responding to the query about the absolute bare minimum increase needed in the budgetary allocations for the year 2021-22 to sustain key programmes, the Ministry has informed the Committee that a minimum of ₹350 crore is required during 2021-22 for carrying out planned projects. The amount will be utilised for augmenting High Performance Computing (HPC), pending ship payments and other scientific activities.

2.9 The Committee while making note of the activities/road map prepared by the Ministry for the year 2021-22 hopes that the Ministry will prioritise its activities according to the actual allocation in BE 2021-22. These schemes and projects are critical for the nation, and need to be adequately funded. The Committee, therefore, recommends that the absolute bare minimum funds of ₹350 crore should be made available to the Ministry at RE stage to enable it to carry out its planned projects uninterrupted.

2.10 The Ministry of Earth Sciences should impress upon the Ministry of Finance and sensitise about its absolute bare minimum requirement of additional funds in order to sustain its key programmes.

2.11 The Committee further opines that the Ministry should prepare a blueprint highlighting the avenues that can be explored by the Ministry to

generate revenue during the next 5 years, to reduce the pressure on the budget of the Ministry, and accomplish its critical expansion plans.

2.12 The Committee recommends that the Ministry scale up holding various seminars, training sessions, etc. online, wherever feasible, to help the Ministry to save its financial resources, whereas the money saved could be better utilised for its R&D activities or other equally important priorities.

2.13 The Committee sought to know about the audit paras of the Ministry. On perusal of the information submitted by the Ministry, the Committee notes that an amount of ₹56.30 crore approximately has been shown as non-recovery of government dues from the central government Departments/State Government/government bodies/private parties during the year 2019-20.

2.14 The Committee recommends that the Ministry should take immediate corrective remedial action in the matter and impresses upon all the related government/private bodies to initiate the process of clearing their dues at the earliest.

3. UMBRELLA SCHEMES OF MINISTRY OF EARTH SCIENCES

3.1 The research & development and operational (service) activities of the Ministry are carried out under the following five major umbrella schemes:

1. Ocean Services, Modelling, Application, Resources and Technology (O-SMART)
2. Atmosphere and Climate Research – Modelling, Observing Systems and Services (ACROSS)
3. Polar and Cryosphere Research (PACER)
4. Seismology and Geosciences (SAGE)
5. Research, Education, Outreach and Training (REACHOUT)

3.2 On being enquired about the mechanism available with the Ministry to review its schemes/programmes/activities, the Ministry submitted that a robust 3-tier mechanism has been adopted to monitor various schemes of the Ministry. The Committee was informed that at apex level, the overall direction for

implementation of programs is provided by the Ministry which it would review on half yearly basis (April and October) *i.e.* in the beginning of the financial year and middle of the year. The Committee notes that at institute levels, particularly for the Autonomous Bodies of the Ministry, the programs are monitored periodically by the Research Advisory Committee of the respective Centres. The Governing Council and Financial Committees of these centres provide direction from technical and financial angles. At program level, the schemes are monitored by the Steering Committees constituted by the Ministry with experts drawn from relevant fields. Besides, the Ministry programs are being monitored by Parliamentary Standing Committee and NITI Aayog periodically.

3.3 Financial performance of these Schemes for the last three years and allocation for the year 2021-22 are as under: -

(₹ in crore)

Scheme	2018-19			2019-20			2020-21 (as on 31.01.2021)			2021-22
	BE	RE	Actual	BE	RE	Actual	BE	RE	Actual	BE
O-SMART	399	440.5	434.49 (98.63%)	483	445	435.50 (97.86%)	567	238.5	219.15 (91.88%)	436.17
ACROSS	375	348	337.89 (97.09%)	413	380	355.24 (93.48%)	440	227.90	182.49 (80.07%)	460
PACER	225	145	144.97 (99.97%)	120	110	109.97 (99.97%)	125	110	89.29 (81.17%)	115
SAGE	110	96	87.23 (90.86%)	115	130	87.23 (67.10%)	120	39.00	25.40 (65.12%)	110
REACH OUT	74.23	94.50	92.98 (98.39%)	90.00	65.00	62.70 (96.46%)	85.00	35.00	27.86 (79.60%)	60
TOTAL	1,183.23	1,124	1,097.56 (97.64%)	1,221	1,130	1,050.64 (92.97%)	1,337	650.40	544.19 (83.67%)	1,181.17

3.4 The above data suggests that the overall financial performance of the umbrella schemes of the Ministry has been satisfactory. However, under the SAGE scheme, the Ministry has spent only 65% of its allocated fund upto January, 2021 during the year 2020-21. The Committee urges the Ministry to optimally utilise the unspent funds during the remaining part of the Financial Year 2020-21.

3.5 The Committee also notes that though the overall budgetary allocation under the umbrella Schemes of the Ministry in BE 2021-22 is little less than the allocation of BE 2020-21, it is hopeful that the Ministry will make earnest efforts to ensure that the funds allocated in BE 2021-22 will be optimally utilised. The Committee also hopes that the Ministry, with the help of its periodic reviews of the financial and physical performance of these Schemes, will strive hard to achieve the targets set for the year 2021-22.

4. AUTONOMOUS BODIES

4.1. The Ministry of Earth Sciences has five Autonomous Bodies under its administrative control namely, (i) Indian National Centre for Ocean Information Services (INCOIS); (ii) National Institute of Ocean Technology (NIOT); (iii) National Centre for Polar and Ocean Research (NCPOR); (iv) Indian Institute of Tropical Meteorology (IITM); and (v) National Centre for Earth Science Studies (NCESS).

4.2. Financial performance of these Institutions for the last three years along with the allocation for the year 2021-22 are as under: -

(₹ in crore)

Institute	2018-19			2019-20			2020-21		
	BE	RE	Actual	BE	RE	Actual	BE	RE	Actual (as on 31.01.2021)
Indian National Centre for Ocean Information Services (INCOIS)	25.00	25.00	25.00 (100.00%)	28.00	21.80	21.80 (100.00%)	26.50	22.60	17.92 (79.29%)
National Institute of Ocean Technology (NIOT)	32.00	49.18	48.18 (97.96%)	35.00	50.78	50.78 (100.00%)	51.51	43.00	34.75 (80.81%)
National Centre for Polar and Ocean Research	20.00	25.00	25.00 (100.00%)	25.00	19.50	19.00 (97.43%)	24.79	21.72	21.01 (96.73%)

Institute	2018-19			2019-20			2020-21		
(NCPOR)									
Indian Institute of Tropical Meteorology (IITM)	65.00	93.30	93.25 (99.94%)	70.00	68.20	68.20 (100.00%)	78.00	83.42	72.92 (87.41%)
National Centre for Earth Science Studies (NCESS)	20.00	13.50	13.13 (97.25%)	20.00	19.50	18.04 (92.51%)	21.00	12.50	8.90 (71.20%)
TOTAL	162.00	205.98	204.56 (99.31%)	178	179.78	177.82 (98.90%)	201.80	183.24	155.50 (84.86%)

4.3 The Committee finds the overall fund utilisation by the autonomous institutions during the years 2018-19, 2019-20 and 2020-21 to be satisfactory which has been to the tune of 99.31%, 98.90% and 84.86% respectively. The Committee, however, feels that the financial performance of National Centre for Earth Science Studies (NCESS) could have been better during the year 2020-21, whereas it utilised only 71.20% of the allocated amount upto 31.01.2021.

4.4 On being enquired about the audit report of the autonomous bodies, the Ministry informed the Committee that the Internal Audit Wing of the Ministry had conducted audits of autonomous bodies. The Committee, on the basis of the information furnished by the Ministry in this regard, notes with concern the issues pertaining to the findings of the Internal Audit Wing which conducted audit of three autonomous bodies i.e. Indian National Centre for Ocean Information Services (INCOIS); National Institute of Ocean Technology (NIOT); and National Centre for Earth Science Studies (NCESS).

4.5 The Committee has noted with concern the non-utilisation of grants amounting to ₹173.67 crore received by NIOT from the Ministry and blockage of Government funds to the tune of ₹16.06 crore in respect of R&D programmes

by NCESS. The Committee, therefore, recommends the Ministry to take immediate remedial action in the matter and ensure that the funds being made available to the autonomous bodies under the control of the Ministry are properly utilised for the purpose envisaged.

5. DEEP OCEAN MISSION

5.1 Responding to the query of the Committee about new programmes/schemes proposed to be initiated by the Ministry during the year 2021-22, it was informed that the Ministry is launching the ambitious Deep Ocean Mission (DOM) with a budget outlay of ₹4168 crore for deep ocean exploration and marine biology/marine biodiversity. DOM will have six major components, namely, (i) Development of Technologies for Deep Sea Mining, Underwater Vehicles and Underwater Robotics; (ii) Development of Ocean Climate Change Advisory Services; (iii) Technological and Conservational Innovations of deep sea biodiversity; (iv) Deep Ocean Survey and Exploration; (v) Energy and freshwater from Ocean; and (vi) Advanced Marine Biology Station at Goa and Foreign Collaborations. It was further informed that Expenditure Finance Committee (EFC) appraisal for the first phase of the Mission is completed with a budget outlay of ₹2857.35 crore and the Cabinet Note is ready for circulation. Secretary, Ministry of Earth Sciences while making a presentation before the Committee informed that a total of ₹4168.50 crore would be required by the Ministry over a period of next five years for the Mission. The Ministry would seek an additional ₹400 crore at RE stage to kickstart the Mission. The Ministry also apprised the Committee about the main activities proposed to be undertaken under DOM programme in the year 2021-22 (subject to allocation of requisite funds during 2021-22), which are as follows:-

1. Fabrication of shallow water personnel sphere for manned Submersible;
2. Locomotion trial of the underwater mining machine for Deep sea mining;
3. Deployment of ROV/AUV for the survey and exploration;
4. Preparation of repository and DNA bank of deep-sea fauna;

5. Exploration of Hydrothermal Deposits and identification of plumes/ potential areas of hydrothermal venting; and
6. Simulation of future projection using global/regional climate ocean models for Ocean Climate Change Advisory Services.

5.2 The Committee notes the various components and proposed activities envisaged by the Ministry under its Deep Ocean Mission and the funds required to realise the intended benefits of the Mission. The Committee acknowledges that this Mission will not only strengthen country's position in the Indian Ocean region, but envisages exploration of minerals, energy and marine diversity of the underwater world, a vast part of which still remains unexplored. Since this Mission is an inter-ministerial Mission where various other Ministries and Departments of the Government of India such as ISRO, DRDO, CSIR, DBT, etc. are also on board with the Ministry of Earth Sciences, the Committee urges all these wings of the Government to work in tandem to make this Mission a success. The Ministry has indicated a requirement of ₹400 crore for the Deep Ocean Mission (DOM). It is of the utmost importance that the Mission is adequately funded by the Government with timely availability of the funds to facilitate the Mission in realising its intended goals in a systematic and time bound manner.

5.3 The Committee, therefore, recommends that the Ministry of Finance should provide the requisite funds at the RE stage to the Ministry so that the Mission is successful.

5.4 On enquiry regarding the benefits of Antarctic Expedition, Indian Arctic Expedition, and Southern Indian Ocean, and China's presence *vis-à-vis* India, the Secretary, MoES apprised that these expeditions are important to study the climate relationship with the Indian monsoon and biodiversity. Further, the Antarctic and Arctic are strategically important for India. The Ministry further submitted that though China's actual expenditure in Antarctica and Arctic regions is not known,

China operates four Antarctic stations, and the fifth station is being built on the Ross sea ice shelf in western Antarctica, operate two Polar Research vessels and an aircraft for Antarctic operations. Also, they have an Arctic station Ny Alesund, Svalbard. The total scientific and technical team working in the Polar regions from China may be a few hundred. Whereas, India has 2 stations in Antarctica and one station in the Arctic, there is no polar research vessel (PRV) and aircraft for Antarctic/Arctic operations. The approximate team size, dedicated to Polar research, at NCPOR is around 30 regular and 60 project staffs. The average expenditure is approximately ₹140 crore per year.

5.5 The Committee acknowledges both the strategic importance of India's presence in the Arctic, the Antarctic, and the Southern Indian Ocean, and the tangible impact of scientific research carried out there for the nation, especially on climate change and the Indian monsoon. The Committee also notes how China has invested both resources and scientific manpower in these regions. The Committee therefore recommends that the Ministry prepare a realistic plan for its expansion in the next 5 years, including capital expenditure for the acquisition of polar research vessel and aircraft, and scientific manpower in the Arctic, Antarctic and the South Indian Ocean. The Committee urges the Ministry to impress upon the Ministry of Finance to provide requisite funds for the same in a timely manner.
