

Press Release on the 411th Report of the Department-related Parliamentary Standing Committee on Science and Technology, Environment, Forests and Climate Change

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The Department-related Parliamentary Standing Committee on Science and Technology, Environment, Forests and Climate Change under the Chairmanship of Shri Bhubaneswar Kalita, M.P., Rajya Sabha presented/laid on the Table its 411th Report on Demands for Grants (2026-27) of the Ministry of Earth Sciences, in both the Houses of Parliament on the 25th March, 2026. The Committee considered and adopted the draft Report in its meeting held on 24th March, 2026. The Recommendations/observations made by the Committee in this Report are enclosed.

2. The entire Report is also available on <https://sansad.in/rs>.

411th Report on Demands for Grants (2026-27) of the Ministry of Earth Sciences

RECOMMENDATIONS/OBSERVATIONS-AT A GLANCE

CHAPTER II

ASSESSMENT OF THE DEMANDS FOR GRANTS OF THE MINISTRY OF EARTH SCIENCES

ANALYSIS OF THE BUDGETARY TRENDS OF THE MINISTRY OF EARTH SCIENCES

The Committee notes that the Ministry of Earth Sciences (MoES) had projected an outlay of ₹4371.54 crore to the Ministry of Finance under Demand No. 24 for the financial year 2026–27. However, the Ministry of Finance approved an outlay of ₹3789.23 crore, which is about 86.67 % of the projected amount. The Committee is of the view that the pattern and extent of fund utilization during the current financial year significantly influence the allocation made in the subsequent year. A careful examination of the Ministry's expenditure pattern over the years indicates that it has not been able to fully utilize the outlays sanctioned to it. For instance, the Ministry was allocated an outlay of ₹3658.08 crore at the BE stage in 2025–26, which was subsequently revised downward to ₹3388.27 crore at the RE stage. Further, the Ministry has been able to incur an expenditure of only ₹2826.83 crore up to 31st January, 2026. This relatively slow pace of expenditure appears to have contributed to the reduction in allocation made to the Ministry in BE 2026–27 vis-à-vis the projected outlay. The Committee also observes that the gap between the outlay projected by MoES to the Ministry of Finance and the allocation approved has widened over the years. The outlay allocated to the Ministry in BE 2023–24 constituted 99.43% of the projected outlay. In BE 2024–25, the allocation was 107.90% of the projected outlay, while in BE 2025–26 it accounted for 97.69% of the projected outlay.

However, the allocation for the forthcoming financial year represents only 86.67% of the projected outlay, indicating a comparatively lower level of budgetary provision against the projected requirement. In view of the above, the Committee urges the Ministry of Earth Sciences to take necessary measures to improve the rate of budget utilization and strive to achieve full utilization of the allocated funds in the coming financial year, so as to avoid any reduction in future budgetary allocations. (Para 2.7)

ASSESSMENT OF THE PATTERN OF BUDGET UTILIZATION BY THE MINISTRY OF EARTH SCIENCES

The Committee notes with concern the persistent underutilization of budgetary allocations by the Ministry of Earth Sciences over the past few years. An analysis of the pattern of expenditure indicates that the utilization of funds has ranged between 83% and 93% in recent years, and the Ministry has not been able to utilize the full budgetary allocation in any of the recent years. The Committee is of the view that such a pattern reflects a slow pace of expenditure and limited capacity to absorb the funds allocated, particularly under the Capital Head. The Committee further observes that the reduction in allocation at the Revised Estimates stage, as seen in 2025–26, has been attributed by the Ministry to procurement delays, implementation challenges, site finalization issues, and other technical or operational constraints. While acknowledging that certain scientific and technological projects may involve complex procedures, the Committee is of the firm opinion that it is the responsibility of the Ministry to anticipate such challenges and establish effective mechanisms to overcome them in a timely manner. The Committee also notes that the capital allocation has shown a declining trend in recent years, partly due to lower utilisation and the completion of certain major capital procurements. In the Committee's view, the persistent shortfall in utilisation has also contributed to a comparatively lower allocation in BE 2026–27. The Committee, therefore, strongly recommends that the Ministry strengthen its planning, project management and financial monitoring mechanisms so as to ensure timely and efficient utilisation of allocated funds. The Ministry should institute periodic reviews of expenditure, particularly under capital-intensive projects, and take proactive steps to address procedural, technical and operational bottlenecks that delay implementation. (Para 2.14)

CHAPTER III

ASSESSMENT OF THE SCHEMES OF THE MINISTRY

PRITHVI VIGYAN (PRITHVI)

The Committee recommends developing advanced indigenous technologies for desalination plants that run on non-renewable energy. Deployed in coastal areas and cities, these plants would augment fresh water supplies to help address existing shortages. (para 3.17)

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The Committee acknowledges the significant role played by the PRITHVI (Prithvi Vigyan) Scheme in strengthening India's capabilities in Earth System Sciences through its integrated focus on atmosphere, oceans, cryosphere, geosciences and societal applications. The Committee notes that several Low-Temperature Thermal Desalination (LTTD) plants have been established

in the Lakshadweep islands under the PRITHVI-OSMART initiative to address the critical issue of potable water availability for island communities. While the Committee recognizes the importance of these plants in ensuring sustainable drinking water supply, it also notes that the desalination plants currently operate using electricity generated through diesel generator sets, which power the island systems. Considering the environmental sensitivity of island ecosystems and the broader national commitment towards clean and renewable energy, the Committee is of the view that reliance on diesel-based power sources should be progressively reduced. The Committee therefore recommends the Ministry to explore the feasibility of making these desalination plants eco-friendly by using sustainable power sources such as solar energy, Ocean Thermal Energy Conversion (OTEC), or other suitable renewable energy technologies.

(para 3.18)

The Committee also examined the proposal for establishing Maitri-II, a new research station in Antarctica to replace the existing Maitri station, which was commissioned in 1989 and has now exceeded its designed operational life. The Committee notes the Ministry's submission that the present station is facing structural deterioration and limitations in waste-management and environmental compliance systems, making the establishment of a modern replacement station necessary to ensure safety, operational sustainability, and India's continued year-round scientific presence in Antarctica in accordance with evolving environmental norms under the Antarctic Treaty System. However, the Committee notes that the architectural and design consultant for the Maitri-II project has been selected through a global design competition and that the winning consortium comprises Ramboll Deutschland GmbH and bofArchitekten, Germany. In this regard, the Committee recalls that India's first Antarctic research station, Dakshin Gangotri, was constructed with the involvement of the Indian Army, demonstrating indigenous capability in undertaking complex operations in extreme polar conditions. The Committee is therefore of the view that greater consideration could have been given to Indian firms with relevant engineering and infrastructure expertise in cold-weather construction technologies. Such an approach could have contributed to cost savings while also providing impetus to the objectives of Make in India and promoting greater self-reliance in specialized polar infrastructure development. The Committee recommends that, in future projects of this nature, the Ministry explore ways to ensure greater participation of Indian companies, either independently or through collaborations, so that domestic capabilities in polar infrastructure and extreme-environment engineering are further strengthened.

(para 3.19)

DEEP OCEAN MISSION

The Committee notes that the Deep Ocean Mission, launched in 2021, with an approved outlay of ₹4,077 crore, for a period of five years, is a flagship initiative aimed at strengthening India's capabilities in deep-sea exploration, resource assessment, marine biodiversity research and development of advanced ocean technologies. While the Committee acknowledges the efforts made by the Ministry and its institutions in progressing with certain components of the Mission, it observes with concern that the overall progress achieved so far does not appear commensurate with the objectives and timelines originally envisaged. The Committee further notes that key components of the Mission, including the Samudrayaan programme and the development of an integrated deep-sea mining system for polymetallic nodules, are still incomplete. It is also observed that against the approved project cost of ₹4,077 crore, only about ₹1,445 crore has been utilised so far, which constitutes roughly 35 per cent of the total project outlay. In the Committee's view, the pace of progress under certain critical verticals of the

Mission needs to be significantly accelerated to ensure that the intended outcomes are achieved within a reasonable timeframe. In this regard, the Committee recommends that the Ministry establish clearly defined and measurable milestones under each of the six verticals of the Deep Ocean Mission. The Committee further recommends that specific timelines be fixed for the achievement of these targets, along with a structured monitoring mechanism to periodically review progress and address implementation bottlenecks. (para 3.30)

MISSION MAUSAM

The Committee appreciates the efforts made by the Ministry under Mission Mausam, which aims to transform India into a “Weather-ready and Climate-smart” nation through the deployment of advanced observational systems, next-generation modelling, and improved weather forecasting and early warning mechanisms. The Committee notes the progress made in strengthening Doppler Weather Radar networks, operationalizing advanced forecasting systems, developing AI-based weather interpretation tools, and establishing platforms for hyper-local weather information dissemination. At the same time, the Committee expresses concern over the increasing incidence of extreme weather events, particularly cloudbursts, which in recent years have caused significant loss of life, damage to infrastructure, and disruption of livelihoods in several parts of the country, especially in mountainous and ecologically fragile regions. The Committee notes the Ministry’s initiative to establish a state-of-the-art cloud microphysics laboratory at the Indian Institute of Tropical Meteorology (IITM), Pune, and to deploy specialised observing systems in cloudburst-prone regions such as the North-Eastern States, the Western Ghats, and the Western Himalayas. The Committee recommends that these research efforts should be strongly oriented towards developing reliable forecasting capabilities and an effective early warning system for cloudburst events so that timely alerts can be issued to vulnerable communities and disaster management authorities. (para 3.41)

The Committee further notes that ocean–atmosphere interactions play a crucial role in influencing weather and climate patterns, including the formation and intensification of cyclones and extreme rainfall events. In this regard, the Committee takes note of the proposal under consideration for the development of floating radar systems mounted on buoys to enhance meteorological observations over oceanic regions where land-based radar coverage is limited. The Committee believes that such systems could significantly improve monitoring of cloud formation and rainfall dynamics over the seas and strengthen cyclone detection and tracking capabilities. The Committee, therefore, recommends the Ministry to accord due priority to the development and deployment of floating radar observation systems and provide adequate financial and institutional support for this initiative under Mission Mausam. (para 3.42)

The Committee recommends that the Ministry should coordinate with bodies like Central Water Commission and Survey of India to develop scientific models for analyzing riverine water flow. This initiative would enable accurate flood forecasting, thereby mitigating damage, particularly in the nation's flood-prone regions. (para 3.43)

CHAPTER IV

VACANCIES

The Committee observes that the Ministry of Earth Sciences is currently implementing three major national missions, namely Deep Ocean Mission, Prithvi Vigyan and Mission Mausam, which are of critical importance for advancing the country's capabilities in ocean exploration, weather and climate services, and earth system science. The successful implementation of these missions depends significantly on the availability of adequate and skilled human resources across the Ministry and its affiliated institutions. However, a substantial number of vacancies exist across different categories of posts in the Ministry and its institutions. The Committee has been informed that the Recruitment Rules for the entry-level posts of the scientific cadre in the Ministry and its affiliated offices are under finalization in consultation with the Union Public Service Commission (UPSC). Further, the finalization of the sanctioned strength of the scientific cadre is under consideration with the Department of Expenditure. The Ministry has also submitted that the Department of Personnel and Training (DoPT) is the cadre-controlling authority for administrative posts of the Ministry, except in the case of Multi-Tasking Staff (MTS). The Committee is of the view that such a large number of vacancies, particularly in scientific and technical posts, could adversely affect the effective implementation of these critical national missions. The Committee, therefore, recommends that the Ministry pursue the matter vigorously with the concerned authorities, including UPSC, the Department of Expenditure and DoPT, to expedite the finalization of recruitment rules, sanctioned strength and recruitment processes. (Para 4.4)

INDIAN METEOROLOGICAL DEPARTMENT (IMD), NEW DELHI

The Committee notes that numerous advanced technologies, including Artificial Intelligence, are being utilized globally to enhance the accuracy and affordability of weather forecasting. In this context, the Committee recommends that the Ministry should conduct a detailed outcome analysis of the budgetary allocations made to the India Meteorological Department (IMD). (Para 4.12)

The Committee is of the opinion that accurate and timely weather prediction is critically important for a country like India, where a large segment of the population depends on weather-reliant economic activities. The Committee has been informed that 48 Doppler Weather Radars (DWRs) are currently operational across the country. However, the Committee observes that the existing network does not provide adequate coverage across several parts of the country, which may affect the accuracy and timeliness of short-range and nowcasting services, particularly for localized severe weather events. The Committee is of the view that DWRs are critical components of a modern weather observation system, as they provide high-resolution, real-time information on rainfall intensity, wind patterns, thunderstorms and severe weather systems. Expanding the DWR network across the country would significantly enhance forecasting capabilities, strengthen early warning systems, and support more effective disaster preparedness and response mechanisms. The Committee notes that under Mission Mausam, the Government has proposed the installation of an additional 84 DWRs across the country to address the existing coverage gaps. The Committee further notes that the estimated expenditure for this expansion is approximately ₹942.57 crore. In view of the above, the Committee recommends that the Ministry may take necessary steps to ensure that the proposed additional

Doppler Weather Radars are installed at the earliest so that most parts of the country are adequately covered by the radar network. The Committee further recommends that the required financial resources may be provided to IMD in a phased manner to facilitate timely implementation of the proposed expansion.

(Para 4.13)

The Committee also notes that a large section of the public is unaware of the existence of Mausam app developed by IMD. Moreover, the user interface of the app is not very user friendly and pales in comparison to other popular apps in this domain. The Committee therefore recommends that IMD should take steps for popularization of the app. The Committee also recommends that IMD should improve the overall User Interface of the app to make it more appealing to the general public.

(Para 4.14)

INDIAN INSTITUTE OF TROPICAL METEOROLOGY (IITM), PUNE

The Committee recognizes the significant role played by the Indian Institute of Tropical Meteorology (IITM), Pune, as a premier national research institution engaged in advanced studies on the atmosphere, ocean and climate systems, particularly in improving weather and climate forecasts for the tropics and understanding the dynamics of the monsoon over India. The Committee notes the research undertaken by IITM under Mission Mausam to examine the meteorological factors contributing to severe air pollution in Delhi during the winter months. In view of the continuing severity of air pollution in Delhi and the National Capital Region, the Committee is of the opinion that scientific research findings such as those generated by IITM are extremely valuable for informed policy-making and mitigation planning. The Committee therefore recommends that the research findings and analytical insights generated by IITM should be shared regularly with relevant regulatory and policy-making bodies, including the Central Pollution Control Board (CPCB), Delhi Pollution Control Committee (DPCC), and the Commission for Air Quality Management (CAQM), as well as other concerned agencies.

(Para

4.18)

NATIONAL CENTRE FOR MEDIUM RANGE WEATHER FORECASTING (NCMRWF), NOIDA

The Committee notes the important role played by the National Centre for Medium Range Weather Forecasting (NCMRWF), Noida, in developing and operating advanced numerical weather prediction models for short-range, medium-range, extended-range and seasonal forecasts, which are widely used by various user agencies including the India Meteorological Department. The Committee appreciates the development of the High-Resolution Rapid Refresh (HRRR) forecasting system, which is designed for short-range prediction of rapidly evolving weather systems, particularly in complex terrains such as the Himalayan region. Considering the increasing occurrence of extreme rainfall and cloudburst events in the Himalayan region and the serious damage caused by such incidents in recent years, the Committee is of the view that strengthening scientific capabilities for their prediction and early warning is of critical importance. The Committee, therefore, recommends the Ministry to provide sustained support to NCMRWF for further development and operationalization of high-resolution modelling systems such as HRRR, including enhanced assimilation of radar and satellite observations over mountainous regions. The Committee further recommends that efforts be made to integrate the outputs of these advanced models

with early warning dissemination systems so that actionable and timely alerts can be provided to disaster management authorities and vulnerable communities.

(Para 4.25)

NATIONAL CENTRE FOR SEISMOLOGY (NCS), DELHI

The Committee notes that the National Centre for Seismology (NCS), Delhi, established in 2015, plays a critical role in monitoring seismic activity across the country, maintaining the National Seismological Network, conducting earthquake hazard assessments, and supporting research in seismology, earthquake precursor studies, and deep borehole investigations. However, the Committee is constrained to note that even after nearly a decade of its establishment, the NCS does not have any sanctioned posts of its own and continues to function with personnel drawn on a loan basis from the Ministry of Earth Sciences (MoES) and the India Meteorological Department (IMD). The Committee finds it difficult to understand why a specialized national institution entrusted with such crucial responsibilities is still operating without a dedicated cadre of scientific, technical, and administrative staff. While noting the Ministry's submission that proposals for the creation of dedicated posts for NCS have been submitted under the PRITHVI scheme, the Committee strongly recommends that the matter be pursued on priority and that the approval process be expedited. (Para 4.29)

INDIAN NATIONAL CENTRE FOR OCEAN INFORMATION SYSTEM (INCOIS), HYDERABAD

The Committee recognizes the critical role played by the Indian National Centre for Ocean Information Services (INCOIS) in providing ocean information and advisory services that support fisheries, maritime operations, coastal management and disaster preparedness. The Committee is of the view that a robust and comprehensive ocean observation network is essential for improving the accuracy and reliability of ocean forecasts, early warning systems and long-term marine research. The Committee notes that there remain long-standing observational gaps in near shore wave measurements along several parts of the Indian coastline. In this regard, the Wave Monitoring Along Near shore (WAMAN) project has played an important role in generating real-time coastal wave observations that support operational wave forecasting, early warning services, maritime safety and scientific research. However, the Committee observes that the present WAMAN network covers only selected segments of the coastline. The Committee therefore recommends that the network of wave buoys under WAMAN be progressively expanded to cover the entire Indian coastline so that a more comprehensive and reliable near shore observation system can be established. (Para 4.38)

The Committee also notes that coastal regions in the country remain relatively under-observed, with limited availability of physico-chemical, biological and fisheries-related data. The absence of observations for several parameters constrains the accuracy of ocean information and advisory services and limits the effectiveness of forecasting systems. In this context, the Committee emphasizes the importance of establishing regional shore stations equipped with appropriate laboratory and monitoring facilities to support long-term coastal observations, data analysis, model validation and capacity building. The Committee is of the view that strengthening coastal observation infrastructure through an expanded WAMAN network and the establishment of shore stations will significantly improve ocean forecasting capabilities and generate valuable long-term datasets. The Committee therefore recommends

that the Ministry provide adequate financial support to INCOIS for strengthening the WAMAN network and for establishing the proposed regional shore stations in a time-bound manner. (Para 4.39)

CENTRE FOR MARINE LIVING RESOURCES AND ECOLOGY (CMLRE), KOCHI

The Committee notes that the Fishery and Oceanographic Research Vessel (FORV) Sagar Sampada, which serves as the backbone of the Marine Living Resources programme implemented by the Centre for Marine Living Resources and Ecology (CMLRE), was commissioned in 1984 and has been in service for more than four decades. The Committee is concerned that the ageing of the vessel has resulted in several operational limitations and that, in its current condition, the vessel may remain operational for deep-sea surveys for only about seven more years. In view of these limitations and considering the growing requirements of deep-sea research under programmes such as the Deep Ocean Mission and the PRITHVI Scheme, the Committee strongly feels that the country requires a modern and advanced Fishery and Oceanographic Research Vessel capable of supporting expanded scientific observations in deep and distant waters. Given that FORV Sagar Sampada is already nearing the end of its operational life, the Committee recommends that the Ministry expedite the necessary procedural formalities and take time-bound steps for the acquisition and construction of the new vessel. The Committee is of the view that the new Fishery and Oceanographic Research Vessel should be built and commissioned at the earliest, preferably within the next two to three years, so that India's marine research programmes are not adversely affected due to the declining operational capability of the existing vessel. (Para 4.44)

NATIONAL CENTRE FOR POLAR AND OCEAN RESEARCH (NCPOR), GOA

The Committee takes note of India's growing engagement in the Arctic through scientific expeditions, international collaborations, and the operation of the Himadri research station in Svalbard. The Committee observes that polar research has acquired increasing significance in recent years due to its direct relevance to global climate systems, ocean circulation, sea-level rise and their impact on weather patterns, including the Indian monsoon. The absence of a dedicated ice-class Polar Research Vessel has been a major constraint in expanding India's polar research activities, particularly in the wider Arctic Ocean. The Committee notes with satisfaction that in-principle approval has already been accorded by the Department of Expenditure for the acquisition of a Polar Research Vessel with ice-breaking capabilities at an estimated cost of ₹2,329.40 crore. In view of the strategic and scientific importance of this project, the Committee recommends that the Ministry expedite the remaining procedural formalities and ensure that adequate financial resources are made available so that the project progresses in a time-bound manner. The Committee further recommends that, wherever feasible, Indian shipbuilding firms should be actively involved in the construction of the Polar Research Vessel. Such an approach would not only strengthen domestic shipbuilding capabilities but also contribute to the objectives of promoting indigenous manufacturing and technological self-reliance in specialized marine infrastructure. (Para 4.50)

NATIONAL INSTITUTE OF OCEAN TECHNOLOGY (NIOT), CHENNAI

The Committee notes that the National Institute of Ocean Technology (NIOT) has transferred around 40 technologies between 2020–26, generating a total revenue of ₹1.64 crore. The Committee expresses concern that these technologies are being transferred at relatively low

prices compared to their commercial potential. It is observed that private partners often earn significant profits from these technologies, while the originating public institutes receive only a marginal share of the value created. The Committee understands that there is no robust mechanism to verify whether the benefits of these low-cost technology transfers reach the intended target users, and that the fees for renewal of licenses after expiry remain undefined. In view of this, the Committee recommends that the Ministry of Earth Sciences should adopt a more competitive, market-aligned pricing framework for technology transfer. Licensing fees should reflect the true commercial value, uniqueness, and societal impact of publicly funded technologies. The Committee further recommends the establishment of clear procedures and norms for technology valuation and licensing, with the National Research Development Corporation (NRDC) and the technology developer jointly determining fees. To ensure transparency, accountability, and proper utilization of publicly funded technologies, all technology transfer agreements should be subjected to periodic third-party audits, and the outcomes of such audits should govern future licensing and renewal terms. (Para 4.58)

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