BACKGROUND INFORMATION:

National Atlas and Thematic Mapping Organisation functions under the administrative control of the Union Ministry of Science & Technology (Department of Science & Technology), Government of India. This is the premiere and only Organisation to showcase natural, socio-economic, scientific & technological aspects of the country through maps and atlases. A large number of qualified professionals including geographers, geologists, statistician, mathematician, software applicants prepare maps and atlases in this organization.

Thematic maps and atlases compiled by NATMO contain the vital inputs for planning at various levels. The maps and atlases prepared by NATMO serve as visible tools to understand the changes and developments taking place in the domains of geo-environmental, political, socio-economic conditions in the country. NATMO's publications like National Atlas of India, Cultural Heritage Atlas, Agriculture Atlas, Forest Atlas, atlas of different states of India, Tourist Atlas, DPMS maps and GMS maps are widely accepted as the basic tools for a wide range of users including planners, decision makers, researchers and students and the common public.

The organization motivates the planners and decision makers to use maps as complimentary documents for development planning at national level, state/UT level and district and sub-district levels. District planning maps are being prepared to meet the planners’ demand.

The mandate of this organization are:

- Compilation of National Atlas in English, Hindi and other regional languages with regular updating.
- Preparation of School Atlases for all boards to provide accurate and standard base information for the educational institutions.
- Preparation of State Atlases and other special atlases.
- Generation of thematic maps and standardization of thematic information.
- Mapping of natural resource assessment towards sustainable socio-economic planning at district level.
- Large scale mapping and development of digital cartographic base for utility based services.
- Providing geographical education and training to visually impaired and low vision society through maps and atlases.
- Management of comprehensive Geo-informatics product for the service of the Nation through web portal.
- National and International cooperation on multidisciplinary geosciences through collaborative programmes.
- Providing unrestricted map service to all sections of the society.
- Other activities entrusted through the Administrative Ministry from time to time.
ONGOING PROJECTS:

A) NATIONAL ATLAS OF INDIA

Initiative:
In the year 1956, the then Prime Minister of India, Pundit Jawaharlal Nehru approved the formation of National Atlas & Thematic Mapping Organisation (then it was National Atlas Organisation) and granted the 'National Atlas Project' to NATMO. Hence, National Atlas is the flagship publication of NATMO. Accordingly ‘भारत राष्ट्रीय एटलस’ first published in the year 1957 and its English Version, 'National Atlas of India' was published in the year 1986. Since then, this publication is being updated and revised keeping pace with the administrative changes in respect of states, districts etc along with conversion in digital mode is under process.

Objectives:
I. To have India's National Atlas like the other countries of the world.
II. To depict the country in respect of its physical, physiographical, soil, geology, geography, geomorphology, demography, culture, administration, etc. in thematic map form.

Achievement:
Revision of National Atlas of India in English has now been taken-up for web publication. It is expected to provide this atlas in Web Map Service (WMS) through NATMO Website by 2020. The vertical demand of the users compelled NATMO to publish the different editions of the Atlas and regular updating and revision of the same. About 100 plates of this atlas have already been processed for uploading in NATMO geoportal.

B) GOLDEN MAP SERVICE (GMS):

Initiative:
On the occasion of Golden Jubilee Celebration of NATMO, this project was taken up with the aim to prepare large-scale map of the cities and towns of the country consisting minute level information relevant to the available utilities, communication, and land use. This map is very much useful for the planners, architects and tourists as well.

Objective:
a) Primary: To provide location base geo-spatial information of a particular site.
b) Secondary: To provide route maps between two points in the country.
c) Tertiary: To provide a basis for a variety of social, economic, administrative operations related to elections, crime, rural marketing, relief and supply etc.

Achievement:
In the current year, 5 maps under this project have been published and another five maps are in advanced stage of publication.
C) DISTRICT PLANNING MAP SERIES (DPMS)

Initiative:
As per the decision of Ministry, NATMO has been assigned this project by DST in the year 1992 and work on the same had been initiated in the year 2002 after formulating the detailed specification. Though this project was shared between NATMO and Survey of India initially, but later on NATMO has been assigned this project solely.

Objective:
To provide a ready-reckoner to the planners, researchers, students in respect of complete geographical, geological, geomorphological, demographic, cultural information and features along with administrative boundary, blocks, specialty, etc. of a particular district both in paper format and in digitized format both in Hindi and English.

Achievement:
This year NATMO has published six district maps which totals 265 districts maps under this project. Digital version of the maps are also going on in the final stage and will be published for the users very soon. However, revision and updating work on account of formation of new districts, are in progress along with the rest project. Another seven district maps are going to be published very soon.

D) ATLAS FOR VISUALLY IMPAIRED (BRAILLE MAP)

Initiative:
The visually challenged persons cannot use the traditional maps or atlases. Keeping the issue in mind, NATMO initiated the project to prepare Atlas for visually impaired in Braille script. Department of Science & Technology, Govt. of India provided financial support and approval for the same. And NATMO become the first ever in the country to publish ‘Atlas for Visually Impaired’ in Braille script, depicting all the continents and with special emphasis on India.

Objective:
To disperse the technological development amongst the people who cannot get it due to their physical disability, i.e. blindness. Publishing Maps and Atlases in Braille Script will definitely provide the utility of maps to the visually challenged person.
Achievement:

Atlas of India (for visually impaired students) in Bengali Braille script has been published during this year. To provide training on how to use tactile maps, a state-level Workshop for Geography Teachers engaged in teaching the Visually Impaired students has been conducted. The workshop was aimed to train Braille Map interpretation and create awareness among the teachers. About 100 teachers from different Schools and Institutions of West Bengal participated in this Workshop.

Regular training program on map reading for the visually impaired students held at different parts of the country. During this year NATMO imparted training to about 600 visually impaired students and teachers on use of tactile maps and atlases.

Having seen the enthusiasm and increasing response to National Level Braille maps Quiz conducted by NATMO in collaboration with Indian National Cartographic Association, NATMO conducted the similar quiz for the second time. This time more schools came forward to participate in Braille quiz competition.

![Participants of Braille Quiz competition conducted at Dehradun](image)

NATMO has been receiving several requests to provide copies of Braille atlas in regional languages also. Accordingly action has been taken to publish Braille atlas in different regional languages including Hindi version. By the end of this Year Atlas of India (in Telugu Braille Script) will be published.

E) DISTRICT RESOURCE PLANNING ATLAS:

Objectives: Major objectives of this project are
1. To prepare resource maps including socio-economic resources of the district.
2. To find out the problems and prospect areas of the district
3. To suggest viable and suitable action plans to overcome the issues.

Methodology:
Base level information for the preparation of thematic maps is being done using satellite imagery of different resolution suitable to the scale of the maps under preparation. Primary data checking and first-hand information is being done through
field survey. All other ancillary data are being procured from different sources like, Census of India, GSI, CGWB, ICAR-NBSS, Economics and Statistics, State administration etc.

**Project undertaken**: Primarily Keonjhar District of Odisha has been chosen as pilot programme. Image processing followed by ground truth surveys have already been completed.

**F) OTHER THEMATIC MAPS**: Following thematic maps have been completed during this year:

- **Medical Tourism map of Kolkata**: This map has been prepared for providing detailed information of health facilities available both in private and public hospitals in Kolkata including the services and hospitalities available in the city during the visit of international patients.

- **Tribal Population Map of India**: This map has been prepared for providing information on distribution of tribal population in the country. Special emphasis has been given for depicting spatial information on sex-ratio, education and livelihood patterns of the community.

- **India Administrative Map (in Hindi)**: Revised edition of this map has been prepared depicting the latest information on states and its boundaries. This map has been released by the Secretary, Department of Science & Technology in the meeting of the Hindi Salahkar Samiti in New Delhi.

**G) MONOGRAPH**

NATMO has completed one Monograph titled ‘Delhi: The City of Cities’ during the current year. The evolution of the city of Delhi, its transition and changing pattern, are being explored in this monograph with detail information.

**MAJOR ACTIVITIES AND ACHIEVEMENTS DURING THE YEAR 2018-19**

I. **INTERNATIONAL COLLABORATION**

After the successful completion of the India ASEAN Archaeological Atlas, a joint collaboration between NATMO and GISTDA, further programme of cooperation was agreed upon by both the sides (Government of India and the Kingdom of Thailand) during the joint meeting held at New Delhi. Accordingly in the joint meeting held at New Delhi it was decided to take up Socio Economic Atlas of Thailand in collaboration with NATMO. Further, during the 4 days Workshop held at Survey of India, discussions were held regarding the themes and methodology to be adopted and the data sources in preparing the said atlas.
II. STATE ATLAS OF GOA
State Atlas of Goa has been completed entirely in GIS environment and the atlas has been released by the Governor of Goa, Her Excellency Smt Mridula Sinha. The atlas covers more than thirty themes grouped under major titles like political, physical, demographic, environmental, tourism etc.

III. EXTRA DEPARTMENTAL PROJECT:
During this year, the following extra-departmental projects had been taken up:-
1) Soil Atlas of Available Micro-Nutrients: NATMO has signed a MoU with Bidhan Chandra Krishi Viswavidyalaya (BCKV) for preparation of atlas on ‘Soil Micronutrient Status’ of 14 districts of West Bengal. NATMO completed the work in time and 200 copies of the atlas have been handed over to BCKV. Further, discussion is in advanced stage for the following extra-departmental projects during this year;

2) Women Empowerment Atlas: The SEED Division, Department of Science & Technology, has awarded this job to NATMO. The atlas will be prepared for showcasing the chronological initiatives and programmes taken up by the government from time to time for empowering women population of the country.
through the intervention of science and technology. Compilation of data is under process, and the atlas will be published by the year 2020.

3) **Village Information System**: Department of Science & Technology has awarded a project on ‘Livelihood of Scheduled Caste and Scheduled Tribe Population’ to Vivekananda Institute of Bio-Technology, Ramkrishna Mission Ashram, Neempith, West Bengal. This institution engaged NATMO for preparing resource maps of villages for further analysis and development. It is proposed that the primary data of a village will be gathered using drone technology. Primary field survey of one village has been completed for this project.

4) **Irrigation Atlas**: NATMO prepared the first ever ‘Irrigation Atlas’ of India in collaboration with Central Ground Water Board in the year 1978. Now, Central Ground Water Board, Government of India, approached NATMO to prepare the revised edition of ‘Irrigation Atlas of India’ incorporating up-to-date information for their department. The preliminary work has been initiated already and the atlas will be prepared by the year 2020.

**COMMITTES AND ACHIEVEMENTS**

During the year two committees have been constituted by the Ministry for NATMO.

I. **High Powered Committee**: One High-Powered Committee for evaluating the need of Manpower/Cadre Restructuring of NATMO has been constituted by the Ministry of Science & Technology. Draft report of the Committee is now ready for final discussion.

![High Powered Committee Meeting in Progress](image)

II. **Technical Specification Committee**: This Committee has been reconstituted under the Chairmanship of Dr. P. S. Acharya, Scientific ‘G’, DST to monitor the setting up of NATMO’s own Geo-Portal. This committee successfully recommended and guided to set up of NATMO Geo-Portal. The geoportal installation job has already been started and it is expected that NATMO Geo-Portal will go live by September 2019.
TECHNOLOGY DEVELOPMENT PROGRAMMES

A) NATMO’S OWN GEO-PORTAL DEVELOPMENT

**Initiative:** Geospatial data generated in pieces over the years under several projects, is now to be made available in the public domain for 24 x 7 accesses by the users. Keeping this objective in view NATMO has taken up the initiative to set-up its own Geo-Portal.

**Achievement:** Technical Specification Committee (constituted by DST) has given necessary guidelines and technical know-how to achieve the goal. Installation of data-centre is completed. Data-engineering work is in progress. The formal kick-off of the geo-portal will be conducted in September, 2019.

B) ONLINE MAPS/MOBILE APPS:

NATMO is committed to provide accurate information not only in the form of paper maps but also in web platforms. There is increasing demand for the NATMO maps to publish in internet for the benefit of the stakeholders. Keeping these things in view, a new attempt has been made to publish the map of Salt Lake with special emphasis on the services of Medical Shops to be made available online as web service and mobile apps service. Benefits of this project are manifold. People with internet facility can locate the medical shops nearby to them, they can get information regarding the availability of the medicines and also about the services like home delivery. For those on the move, information will be available through web apps that can be downloaded to their smart phones. Online editing and crowd sourcing will also be allowed to register users thereby helps NATMO to gather more data. This project proposed by NATMO has been tweeted by the Hon’ble Union Minister of Science & Technology Dr. Harsha Vardhan during his visit to NATMO on 3rd May 2017.

Development of Mobile apps is underway and is expected to launch soon after the Geoportal is made Go Live.
OTHER SERVICES:

1. TRAINING AND DEVELOPMENT FOR S&T ADVANCEMENT OF THE COUNTRY

NATMO also provides training on Thematic Cartography, Digital Cartography, Photogrammetry, Remote Sensing and GIS, Aerial Photography to the officers and staff of various govt. and private departments, university and college teachers, scholars and students of the country.

NATMO has signed a MoU with South Asian Institute of Advance Research and Development (SAIARD) for collaboration in training. Training calendar for the year has been compiled and the first batch of training will be conducted during July, 2019.

2. LIBRARY & DOCUMENTATION CENTRE:

NATMO has a very rich and well equipped library and documentation centre and Archive, where researchers and scholars can gather a vast ready-made data/information using the database and resources in the library and documentation centre (Fig 7). NATMO library has 22,216 books, 65000 maps and topographical sheets at present. About 550 teachers, research scholars and students get benefited from NATMO Library this year. This year NATMO has procured about 52 books on different themes such as Atlas on Climate Change, Atlas on Bengal, Urban Heritage and Development, Physical and Cultural Geography, Population Geography.

NATMO Documentation Centre and Archive

NUMBER OF PEOPLE GETTING BENEFITED FROM THE PROJECTS/SCHEMES:

Millions of students all over the country, research scholars, teachers, professors are using NATMO maps and atlases. Recently NCERT has expressed interest towards school atlases and atlas for visually handicapped. These will soon be recommended by NCERT in school curriculum.
Hundreds of scholars, technocrats, teachers, engineers take training in digital cartography, remote sensing, GIS, GPS technology application from NATMO so far.

INTERNATIONAL SCIENCE AND TECHNOLOGY COOPERATION:
Government of India, in its policy to strengthen bilateral relation with the neighbouring countries, has signed an agreement Geospatial cooperation and Technology Transfer with Kingdom Thailand. Accordingly a project entitled ‘India-ASEAN Archaeological Atlas from Satellite Data – Connectivity of Regional Culture’ has been completed (Fig 8) and the atlas was released in Thailand on 3rd August 2017.

It was also decided to conduct a joint workshop in the month of February 2018 to finalise the themes and methodology for joint collaboration. The probable venue of the workshop will be at the office of Survey of India, Dehra Dun.

INFRASTRUCTURE DEVELOPMENT:
During the year, NATMO has almost completed the construction of Rashtriya Atlas Bhavan to get a dedicated place for its research activities.

Rashtriya Atlas Bhavan

Official Takeover of the building is in process. NATMO is awaiting submission of all the relevant documents like Completion Certificate, Final Drawing, Electrical Circuit Diagrams, Power Consumption details etc by CPWD. Letters are already served to Chief Executive Engineer CPWD and it is expected that CPWD will respond to positively and comply with NATMO’s demands.

PARTICIPATION IN NATIONAL AND INTERNATIONAL SEMINARS

- A good number of NATMO officials actively participated in various conferences.
OTHER ACTIVITIES DONE DURING THE PERIOD:

- In response to several requests from universities and colleges, NATMO is organizing internship courses for the benefit of students as part of the Outreach activities.
- NATMO participated in regional, national and international conferences, exhibitions, book fairs in order to popularize maps, atlases and Geographical Information System technology.
- NATMO is continuously engaged in data base creation at grass root level, subdistrict level, district level, state level and national level.
GLIMPSES OF IMPORTANT ACTIVITIES IN NATMO DURING THE YEAR:

- **SWACHH BHARAT ABHIYAN IN NATMO:**
  - Awareness programme on cleanliness among the school children.
  - Installation of indoor plants for air purification.
REVENUE GENERATED DURING FINANCIAL YEAR OF 2018-2019 (APRIL TO JANUARY 2018)

The Organisation generated revenue more than rupees 2.5 lakh by selling maps, atlases and monographs from the sales counters of Kolkata Headquarters, Delhi Sales Counter, Exhibition stalls and SOI outlets.

CONCLUSION:

NATMO as a pioneer mapping organisation has been playing a substantial role in contributing to nation development. NATMO’s achievements are just the open proof of its integrity and commitment to the societal needs. We expect to provide more and better map services using state of art technology in the coming years.