

Restriction on Maps in India: An Anachronism that needs Removal

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Toposheets, as an essential tool of information, should be available to all citizens as a matter of right. But in India, due to 'Imaginary reasons' of security, the country practices policy of secrecy. Is it justified?

From a Babylonian map on clay tablet dating back to 2300 B. C. to digital cartography of the present day, map making has made tremendous progress. With the new millenium only one year away, the making the utility of map is in a state of major revolution. In modern society, maps constitute the most important source of geographical, physical, economic, scientific and sociological information. Topographical maps form the essential base for geological mapping, mineral prospecting, groundwater surveys, environmental studies and geotechnical investigations, including engineering constructions besides their extensive use in the filed of agriculture, forestry, soil survey, defence planning, urban and rural development, mountaineering and tourism.

Survey of India-maker of maps

The Survey of India (SOI), which is 232 years old, is responsible for all topographical and developmental surveys. This is unlike in the United States of America where the U. S. Geological Survey is responsible for publishing national topographic maps. The Survey of India, with its reach of 'Aa Setu Himachalam', is geared to meet the challenges of surveying the entire country. It acts as adviser to the Government of India on Survey matters Viz., geodesy, photogrammetry, mapping and map reproduction. It has aerially photographed the entire country on various scales and has availed of the imageries beamed from indigenous as well as international satellites.

The Survey of India is a pioneer in geodetic research and is repository of invaluable data. Satellite geodesy was introduced in 1982 and many vectors have since been observed to strengthen the Indian Geodetic Network. Observations are made of sea levels at tidal stations. Digital Cartographic Data Base on 1:2,50,000 scale has been initiated. Geographical Information system (GIS) has also been adopted. Thus the SOI has kept abreast of the things in all aspects of Cartography and surveying.

Map coverage

India, with an area of 32,87,263 Km², is covered by both topographical maps and geographical maps. The topographical maps are on sufficiently large scale of 1:25,000, 1:50,000 which are ideally suited for the professional work of geologists, geographers, foresters, engineers, planners, tourists, trekkers, mountaineers and others. The geographical maps on the other hand are on such a small scale of less than 1:2,50,000 or 1 inch to 4 miles that they are useful mainly for synoptic views.

India is covered by nearly 385 toposheets on 1:2,50,000 scale and these are also called as Degree Sheets. Each Degree sheet has 16 toposheets of 1:50,000 scale and at present the whole of the country is covered by 1:50,000 rigorous metric surveys in more than 5000 toposheets. This is no doubt an impressive record for any country in the world. Each 1:50,000 scale sheet contains four 1:25,000 scale sheets. More than 35% of the country has also been covered on 1:25,000 scale. Therefore, there is no dearth of modern toposheets. Guide Maps on scale of 1:10,000 and smaller and available for towns and cities in various States.

Users

In India, topographic maps on scales of 1:2,50,000 and 1:50,000 scales are in great demand from various institutions. The Geological Survey of India carries out all its systematic geological mapping on 1:50,000 and 1:25,000 scale toposheets and is one the largest indenters of toposheets. Other organisations which are regular users of toposheets include the Forest Survey of India, Central Water & Power Commission, National Remote Sensing Agencies, Agricultural Universities, Geology, Geography, Sociology, Archaeology Department of all Universities, Research Organisations dealing with Earth Science and related subjects, Directorate of Mining and Geology, Defence Organisations, Soil Survey Department, Mineral Corporations, Indian Bureau of Mines, Oil and Natural Gas Corporation, Atomic Mineral Division, Indian Space Research Organisation, Planning Departments, Statistical Institutes, Environmental Organisations, Adventure Clubs, Mountaineering Parties, Mineral Prospectors and Mining Companies. Thus, there is hardly an organisation in India, which does not require maps at some state or other of its activity.

Restriction on maps

Toposheet, as an essential tool of information, should be available to all citizens as a matter of right. Unfortunately, the Colonial British Government in India introduced the principle of security of maps by a strict rule that surveyors of Survey of India should treat their work as secret and not pass on copies even to local officers, civil or military, without proper authority. This restriction at that time was based on deep suspicion that many public officers carried papers in their charge to England, especially maps, which could be put to evil purpose. For the colonial governments in India, maps served the purpose of consolidation of its empire rather than education and dissemination of information. It insisted on secrecy, as it was fearful of giving useful information to alien nations. Gen. Walker, the then Surveyor General, almost lost his job for permitting publication of details of exploration and mapping of Tibet, Central Asia, Nepal, Bhutan and other Northern Frontier areas in the Journals of Royal Geo-graphic Society and Asiatic society of Bengal because, the then British Indian Government had considered this information secret. Thus, the roots of this policy of restricting map information can be traced to the colonial period. Though Britain has outgrown this colonial hangover of secrecy, it is a great pity that Independent India stills practices this restriction as an uncompromising rule and enforces it rigidity.

The restriction on the sale, publication and distribution of maps published by the Survey of India took more inflexible form in the period 1960-62, which witnessed a conflict with and attack by China along the northern border and later in 1965 in the aftermath of Indo-Pakistan war. However, the prevalent policy of restriction of maps and toposheets was laid down in the late 1967 and further amended in the early 1968 by the Ministry of Defence, Government of India. According to this, all topographical and geographical maps of areas (of about 80 km) between the delineated line, shown on the "Index to Toposheets" published by the Survey of India, and the land border, and also of similar maps of Bhutan and Sikkim, and similar maps of the outlying islands viz, Andaman and Nicobar, and Lakshdweep Island comprising Laccadiv, Minocoy and Amindivi, on scales 1:1 million and larger, are restricted and their sale, publication and distribution are governed by separate set of rules. Thus, nearly 227 out of 385 Degree toposheets remain restricted and this includes SOI Map catalogue published in 1962, and also the book "Gravity in India." Application for such maps has to be made on Form 0.57 (a) Obtainable from Survey of India and issue of such maps has to be made subject to series of conditions mentioned in the form. The restricted toposheets are issued only to Government officials, educational scientific institutions and semi-government organisations. However, in practice, educational institutions cannot directly obtain the maps. In one case an indent of a faculty member, countersigned by the Head of his University, was rejected with the suggestion it should be got countersigned by a joint Secretary of the State Government. Only in 1971 clearance of Ministry of Defence was accorded for issue of restricted maps to private individuals, organisations and commercial firms whose indent, applied through State Government, has to be approved by the Ministry of Defence. Persons receiving "Restricted" maps have to submit an annual certificate of safe custody of such maps by 31st December every year. In case, part of any area falls across the external boundary of India, the indent has to be cleared by Ministry of External Affairs. Topographical maps both for restricted as well as unrestricted areas which depict grid lines cannot be issued to civilian users without the prior approval of the Ministry of Defence. Without gridlines maps lose some of their utility for easy reference and location.

Every user organisation in India without exception has seriously suffered professionally for lack of easy availability of toposheets of restricted category. This has placed a major impediment to progress without serving the security needs. Aerial photographs falling within restricted or unrestricted areas are classified as Secret/Top secret for whole of India, despite the fact that these photographs are an important tool for research workers in cartography, environmental studies, geological interpretation, planning and development of growing towns and increasing urbanisation. Even Geological maps, without contour details, pertaining to "Restricted" areas, prepared by Geological Survey of India need clearance from the Ministry of Defence prior to their publication. In many cases, latitudes and longitudes are asked to be deleted and in some cases even exclusion scale for the map is suggested making a mockery of Geographical Information Systems and reducing the utility of geological maps. Geological Map of Cuddapah basin, published by GSI, has not been released for sale for a long time and it is now labelled as "restricted". Such an irrational policy denies credit to earth scientists who prepared the geological maps and restricts the free flow of an innocuous scientific information to fellow scientists. This practice of restriction of such valid geological information has placed India in a poor light among the comity of nations. This has caused tremendous frustration among scientist, research students and a host of other users, whose geological maps prepared in difficult field conditions at the expense of tax-payer's money are gathering dust in dark almirahs.

Restricted maps cannot be exported without the prior approval of the Ministry of Defence. Also export of maps even of unrestricted area on scale of quarter inch and larger and the microfilms obtained from such maps depicting any part of India including its international boundaries and showing topographical features by contours, is prohibited. As a contrast, maps on large scale of any country are easily available in Western

countries for purchase in any book shop.

Export of geoscientific thematic maps on a scale of 1:25,000 based on unrestricted toposheets is prohibited. For the sale of such maps to foreign agencies security vetting by the Ministry of Defence and clearance by Ministries of External Affairs and Finance would be essential.

Despite extensive cartographic, geodetic, geophysical, aerial and space coverage of India, there is a woefully paucity of essential information made available to needy scientist, research workers and organisations so as to imperil the scientific progress of the country. Restriction on toposheets has deprived numerous mountaineering parties from India and abroad of all the essential maps information of the Himalaya and other mountain regions of the country, though some of the finest maps of Inaccessible mountains and their peaks were earlier prepared by hardy private climbers.

Restriction of Toposheet-irrelevant and ludicrous

India is committed to (i) Right of information (ii) Liberalisation and Globalisation of economy, (iii) Surge in information technology (IT), (iv) Modernisation of technology, (v) Major changes in the Official Secrets Act 1923. If these are our objectives for achievement before the beginning of the millennium, it calls for drastic changes in our comprehension of security for reasons cited below:

1. Satellite has revolutionised map making process. Thousands of satellites are encircling the Earth photographing every inch of the land and sea. India already has a satellite with a resolution of 5.8 meters. The CARTOSAT (or IRS-P5) which India is planning to launch will be capable of providing resolutions of 2.5 meter in panchromatic band and a swath of 30 km. This satellite will have the capability of generating thematic maps with a scale of 1:5,000. The EOSAT, being launched by an American company, would offer 1 meter resolution. The satellite remote sensing system helps in recognising roads, buildings, all sorts of installations, waterbodies, rail and telephone lines, tree, vegetation, nature of crops, berthing of ships, airports, rocks, soil, dams, canals and even the registration number of vehicles. Satellites can keep count of vehicles moving on roads, concentration of people, even the smoke from the chimneys of hamlet. All this information is accessible through foreign commercial remote sensing agencies. The range and depth of satellite observation with regard to so called security aspects is so enormous, the information contained in 1:50,000 toposheet pales into insignificance. Thus restricting toposheets does not serve any purpose, other than negative impact on the working of Indian users.
2. Defence Ministry insists on deletion of latitude and longitude before the publication of geological maps for security reasons! Thus hand held Global Positioning System (GPS) has revolutionised the process of accurate location and mapping by obtaining coordinates of any locality with pin-point accuracy and also its altitude. GPS can be used even under canopy of trees. GPS receivers use sophisticated, signal processing techniques to lock onto and track the GPS satellites. They have extensive application in combination with laser range finder, spectrum analysers, geiger counters, depth sounders, magnetometers etc. In the light of this, no security purpose is achieved by deleting the coordinates on geological maps and also by restricting levelling and trigonometrical data from publication.
3. The 1:250,000 scale toposheets which are restricted by the Survey of India on security consideration along external border and coast line are available for sale in the Stanford International Map Centre, London. Satellite imageries which provide all the geographical and topographical information are openly sold in book shops in foreign countries through toposheets with similar information are restricted in India on security considerations. What purpose has this restriction served except denying access to vital information to our own researchers.
4. Remote Sensing techniques have brought about a sea change in vital data gathering. Almost every country in the world has access to this data which is marketed commercially by private agencies in the world. Satellites are capable of gathering data over a wide area and the data so available is more homogenous in nature than collected through several ground stations and are also spatially continuous. The data collected through satellite are amenable to digitisation, easier processing, computation and easily converted to maps. This data serve as a foundation to GIS.

Much of the Himalayan region and Tibet is covered by the Gravity Map issued by US Aeronautical Chart and Information Centre on $1^{\circ} \times 1^{\circ}$ grid whereas the "Gravity in India" by Survey of India is a restricted publication. This is yet another example of infructuous exercise of security. Gravity and magnetic data are obtained by satellites encircling the earth and are easily available. In this background, such restrictions on leveling, trigonometrical and gravity data appear meaningless.

Satellite thematic mapper spectral bands have extensive scientific applications in coastal water mapping, soil mapping, discrimination of deciduous/coniferous flora, mapping of cultural features, mapping of vegetation

types, discrimination of vegetated and non-vegetated areas, soil moisture studies and thermal mapping. Thus remote sensing techniques have provided a wide ranging tool in our understanding of the planet earth in all its diversities without any distinction national boundaries of individual nations. Scientist with the multinational oil companies are using remote sensing data to build global bathymetric maps of the seafloor adding new dimensions to regional study. The National Imagery and Mapping Agency of the U. S. Defence Department is offering free mapping software data for viewing many of its comprehensive data files, and the U. S. G. S. makes it invaluable map data on the world wide web. Preparations are afoot in the USA to maps available through slotting machines installed in shopping centres. When the wave of map information is sweeping the world we can not remain cloistered in our cocoons with our outmoded rules of restrictions and secrecy.

In this age of virtual revolution in map-making and explosion of technological advancement in gathering vital information pertaining natural and human activities related to planet earth, and dissemination of information through Internet, the restrictions placed on toposheets and maps gives a wrong signal about the maturity of approach of this great country. This myopic vision should not be allowed to continue, if we have to enter the next millenium with a sense of confidence and hope. We cannot reconcile to the rule of restrictions on maps when electronic eyes from across space peer into everything on the surface of the earth, and maps constitute an unparalleled teaching and professional tool.

It can be said with all certainty, confidence and courage that the security of this great country will not be compromised by allowing easy access to maps, toposheets, aerial photographs and other ground related geophysical data to citizens of India. What is required is national vigial and self-confidence and not unreasonable restriction on toposhets and maps. We have to open our windows for fresh air to come in and have interaction with the outside world. The restriction on export on maps appear not only backward and downright primitive but is the very antithesis of present trend of globalisation, and needs removal.

Action needed

After analysing various national and global aspects of map making and accessibility to map information, it becomes clear that the whole set of restrictions that govern the procedure for obtaining maps are anachronistic and have no place in our democratic society. The scientist of the country have an in-depth understanding of the modern security needs and in most of the cases they have contributed greatly towards creating an awareness among the man in uniform who are entrusted with the security of the country. Therefore, their plea for removal of restriction on availability of maps has a sound basis and cannot be ignored. As a first step all the toposheets on the scales of 1:25,000 and 1:50,000 should be derestricted. The demarcation of the line of restriction may be limited, if at all absolutely necessary, to a width of 25 km along land border and restricted to maps on 1:25,000 scale only. The area adjoining the coastlines should be derestricted and toposheets of these areas on all scale should be made available.

Geological maps on all scales and also all over thematic maps should be called to be published by official and non-official organisations without their seeking any clearance from Ministry of Defence. There is an immediate need for the removal of restriction on export of all maps. Restriction on the sale of aerial photographs should be removed. The geophysical, geodesic and trigonometrical data should be accessible to all those who need them. The necessity of gridded toposheets need not be over emphasised an this information should be provided on all toposheets for civilian use. It is necessary to publish a set of physiographic maps of India on 1:250,000 scale for its educational value. The Survey of India may open outlets all over India for sale of maps of any sector. These suggestions may sound too radical for implementation but on half hearted measure would meet the needs of the day.

Indian scientist have equal concern and understanding about nation's security, but they cannot close their eyes to the ludicrous restrictions on the flow of simple and essential information about their land, which is not going to compromise the security. It is time the entire scientific community in India raises its voice and gets this archaic restriction removed once for all by scientifically convincing and Defence Ministry, and thereby earn the gratitude of all citizens. This should be our priority before the bell tolls for the next millenium.