Country Profile: India

Country Profile (PDF)

Country Resources

Topographic

Series	Publisher	Scale	Years	Sheets
Bangladesh 1:50,000 Scale Topographic Maps	SB	1:50,000	1959 – 2009	444
Bangladesh 1:250,000 Scale Topographic Maps	SB	1:250,000	1970 – 2003	73
India 1:50,000 Scale Topographic Maps	SI	1:50,000	1959 – 1999	2,829
South Asia 1:126,720 Scale Topographic Maps	SI	1:126,720	1877 – 1955	1,464
India 1:250,000 Scale Topographic Maps	SI	1:250,000	1960 – 1998	171
India and Adjacent Countries 1:1,000,000 Scale Topographic Maps	SI	1:1,000,000	1904 – 1942	147
Pakistan 1:250,000 Scale Topographic Maps	SPAK	1:250,000	1946 – 1970	108
Pakistan 1:1,000,000 Scale Topographic Maps	SPAK	1:1,000,000	1971 – 1994	11

Nautical

Series	Publisher	Scale	Years	Sheets
India Nautical Charts (All Scales)	IHO	Varies	1996 – 2024	372

Geoscientific

Series	Publisher	Scale	Years	Sheets
China 1:2,500,000 Scale Geological Map (6 sheets)	GPH	1:2,500,000	2005	1
China 1:2,500,000 Scale Quaternary Geological Map (9 sheets)	GPH	1:2,500,000	1990	1
China 1:4,000,000 Scale Geological Map (2 sheets)	GPH	1:4,000,000	1977	1
China 1:5,000,000 Scale Metallic Resources Map	GPH	1:5,000,000	1992	1
China 1:5,000,000 Scale Mineral Resources Map	GPH	1:5,000,000	1992	1
China 1:5,000,000 Scale Nonmetallic Resources Map	GPH	1:5,000,000	1992	1
India 1:250,000 Scale District Geological Maps	GSI	1:250,000	1997 – 2010	38
India 1:250,000 Scale Geological Maps	GSI	1:250,000	1977 – 1999	90
Nepal 1:1,000,000 Scale Geological Map	DMG	1:1,000,000	1994	1
Nepal 1:250,000 Scale Geological Maps	NSD	1:250,000	1984 – 2011	5
Indonesia 1:5,000,000 Scale Geological Maps	PPPG/GRDC	1:5,000,000	1996	1
Indonesia 1:10,000,000 Scale Geological Maps	PPPG/GRDC	1:10,000,000	2000	1

Thematic

Series	Publisher	Scale	Years	Sheets
The World 1:30,000,000 Scale Topographic Map Series 1145 (NGA)	DMA	1:30,000,000		2

Global Census Archive: GIS Census Data

Year	Questions / Answers	ADM Level	Polygons at ADM	Data Points
2011	72 / 85	4	651,098	55,343,330

Global Resources

Topographic

Series	Publisher	Scale	Years	Sheets
Soviet Military City Plans	VTU GSh	Varies	1944 – 2003	3,020
Soviet Military 1:100,000 Scale Topographic Maps	VTU GSh	1:100,000	1947 – 1999	24,897
Soviet Military 1:200,000 Scale Topographic Maps	VTU GSh	1:200,000	1949 – 2009	17,799
Soviet Military 1:500,000 Scale Topographic Maps	VTU GSh	1:500,000	1953 – 1998	3,093

Nautical

Series	Publisher	Scale	Years	Sheets
NGA Nautical Charts POD Certified (All Scales)	NGA	Varies	1943 – 2013	4,517

Aeronautical

Series	Publisher	Scale	Years	Sheets
Joint Operations Graphic (JOG 1501A) 1:250,000 – Aeronautical	DMA	1:250,000	1958 – 2007	4,204
Tactical Pilotage Chart (TPC) 1:500,000 Scale – Aeronautical	DMA	1:500,000	1967 – 2006	598
Operational Navigation Chart (ONC) 1:1,000,000 Scale – Aeronautical	DMA	1:1,000,000	1969 – 2001	243
Jet Navigation Chart (JNC) 1:2,000,000 Scale – Aeronautical	DMA	1:2,000,000	1971 – 1999	117
Global Navigation and Planning Chart (GNC) 1:5,000,000 Scale – Aeronautical	DMA	1:5,000,000	1981 – 1999	27

Geoscientific

Series	Publisher	Scale	Years	Sheets
Soviet Military 1:1,000,000 Scale Topographic Maps	VTU GSh	1:1,000,000	1948 – 1994	1,089

Note: East View Geospatial is continuously sourcing new resources that may not yet be listed in Global Explorer. Please contact us if you have geodata needs beyond what is listed above and we will be happy to discuss available off-the-shelf and custom solutions.

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Historical Country Mapping Information

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Country Profile (PDF)

Topographic

The **Survey of India (SI)** is the oldest official scientific department in India with a history that can be traced back to the appointment of **James Rennell** as **Surveyor General of Bengal** in 1767. Separate survey departments were set up in Bengal, Bombay and Madras by the first decade of the nineteenth century and the **Survey of India** grew from the Great Trigonometrical Survey, established in 1818. Throughout the nineteenth century complete coverage of the sub-continent was attained in the *Indian atlas*, published at 1:253,440 scale. Systems for revenue and cadastral surveys for land registration were also established, but it was not until 1905 that a single sub-continental standard was fixed for topographic survey. This set up 1:63,360 scale mapping on a conical conformal projection, Everest ellipsoid, with sheets following a quarter-degree sheet line system, and printed in full color with contoured relief. More remote areas were to be mapped in a quarter inch series (1:253,440 scale). This standard still greatly influences specifications used for the mapping of South Asian countries.

After independence **SI** became responsible for the mapping of India alone, following the establishment of separate survey offices in Sri Lanka and Pakistan. By then 3,355 1:63,360 scale sheet areas had been published and 266 sheets at 1:253,440 scale covered newly independent India. The metric system was introduced in 1956, sheet lines were maintained and scales changed to metric equivalents. A

1:250,000 scale series had already replaced the 1:253,440 scale map and covers India in 394 sheets. Relief is shown by 100 m or 200 m intervals and sheets are revised on a 15-year cycle, using data collected for larger scale programs.

Coverage of the country in 1:50,000 scale mapping was extended from 1956, earlier 1:63,360 sheets were progressively converted on revision and new areas were mapped in the metric series for the first time until the series was completed in 5,106 sheets in 1982. This map shows relief with 5 m, 10 m or 20 m contours depending upon the nature of the terrain. The design still resembles the cartographic styles adopted by the early **Survey of India**, but the series has been produced using photogrammetric techniques for many years and a revision program is in operation which aims to ensure no sheet is older than 15 years, while revising every five years for areas of highest priority.

In 1956 a 1:25,000 scale series was started, and following completion of the 1:50,000 scale map emphasis has shifted to this program. Complete coverage in the 1:25,000 scale map would require about 20,000 sheets; about 5,000 of this total have been compiled and like the 1:50,000 scale sheets show relief with 5 m, 10 m or 20 m intervals.

In the years between independence and the late 1990s topographic mapping from **SI** was not available for export from India at scales larger than 1:1 000 000. The **Ministry of Defence** restricts the use of map and aerial photographic information within the country and prohibits export of larger scales. It also operates a separate military mapping agency, the **Military Survey**. It remains difficult to acquire topographic mapping in all three major series for many areas of the country, in particular for coastal and mountainous frontier areas of the country, and only designated agencies are authorized to digitize data from hard copy maps. But sheets are advertised as available from several major international map dealers, and we have included graphic indexes for major topographic series, and listed them in our catalogue section. Late in 1998 pressure was building from the GIS community for government to liberalize its policy towards map and spatial data acquisition, in particular following the successful development of government sponsored information policies aimed at better networking the country, including the establishment of the NICNET programme. Pressure groups such as the **Centre for Spatial Database Management and Solutions (CSDMS)** and the growing GIS information economy make a shift in policy more likely.

Soviet military topographic mapping of India is available at the following scales: 1:1,000,000 (30 sheets, complete coverage, published 19578-1990); 1:500,000 (84 sheets, complete coverage, published 1954-1987); 1:200,000 (512 sheets, primarily complete coverage, published 1953-1989); 1:100,000 (437 sheets, northern country coverage, published 1980-1986) and city (1:10,000 to 1:25,000) topographic mapping of 29 major cities from Ahmadabad to Vishakhapatnam published between 1972 and 1991. These products are available in print, digital raster and digital vector GIS formats from **East View Geospatial**.

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GIS/Vector

Since the early 1980s **SI** has been investing in digital technologies, but most effort so far has been devoted towards automating conventional hard copy publication programmes, rather than creating databases for use in GIS. Three digital production centers have completed the capture of 1:250,000 scale cartographic data and a number of smaller scale maps are produced on the digital production flowline, including the 1:2,500,000 and 1:4,000,000 scale motoring maps. More recently attention has been given towards establishing national spatial databases. Digital terrain data from the 1:250,000 scale map is available for the whole of India and a 1:50,000 scale digital cartographic database is also being established. **SI** also maintains an ARC/INFO-based administrative boundary database. Experimental use has been made of SPOT and LANDSAT satellite data for the revision of topographic mapping, and it is planned to automate remote sensing based revision procedures for all three main topographic series, once the new generation of high resolution sensors on the IRS and CARTOSAT 1 platforms are operational.

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Nautical

The **Naval Hydrographic Office** was established as an independant agency in 1954 with headquarters in Dehra Dun. It builds upon over two centuries of British imperial nautical charting and is currently responsible for hydrographic and bathymetric charting of Indian coasts and for smaller scale charting covering much of the Indian Ocean area. It makes important contributions to the GEBCO program and

installed an automated cartographic system in 1996, with a view to converting from hard copy production to an electronic navigation chart database, by digitizing navigational charts over a three year period. Oceanographic studies of coastal and open ocean environments have been carried out by the **National Institute of Oceanography (NIO)**, Goa, including significant mapping of the Indian ocean described in our oceanic section.

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Geological/Scientific

Geological and other earth science mapping of India is the responsibility of the **Geological Survey of India (GSI)**, Kolkata. A 1:250,000 scale series is on topographic sheet lines, with a generalized topographic base, and will cover the country in 394 five-color sheets. Earlier sheets in the series were published at 1:253,440 scale. Some 200 sheets in this series have been compiled. A 1:1,000,000 scale geological atlas has been in progress since 1976. Mineralogical and geological maps of the country are published at 1:1,000,000 and 1:2,000,000 scales. Eleven 1:500,000 scale sea bed sediment maps have also been published. The **National Geophysical Research Institute (NGRI)** is the Indian center for research into the physics of the earth and its interior. It carries out geophysical and geochemical surveys in support of mining and petroleum exploration industries, including magnetic, gravity, geothermal, and hydrogeological surveys and research. In the late 1970s **NGRI** published small scale gravity mapping of the country.

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Imagery

The **National Remote Sensing Agency** is the focal point for acquiring, processing, generating and disseminating satellite and aerial data products relating to India, including the Indian IRS series of resources satellites. Numerous mapping applications have been carried out in conjunction with national and state level agencies.

Several GIS houses have grown over the last 10 years and now release a number of their own as well as federal and locally generated digital maps. **RMSI** is the most significant supplier of this data. Its digital product range includes boundary and demographic data, road and rail networks, and a number of city data sets, as well as digital terrain data, supplied as grid or contour data, at 30-arc-second resolution, or in a high resolution product with a 1 m grid resolution. Another data supplier is **ML Infomap**, with a similar small scale product range, which includes a CD-ROM based rural market planner, incorporating the names and populations of over 600,000 villages with over forty socio-economic indicators; and the *Pollmap* package, which brings together boundary, census and electoral data.

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Soil

The **National Bureau of Soil Survey and Land Use Planning (NBSSLUP)** was set up in 1976 and carries out soil resource mapping, agro-ecological zoning and mapping of degraded soils at country, state and district levels. Soil data is collected at 1:250,000 scale for states and 1:1,000,000 scale for national mapping. Publications from these data include full-color mapping of West Bengal, Pondicherry and Gujarat as well as national small-scale coverage of agro-ecological regions, soil degradation and soil resources. **NBSSLUP** issues these maps with accompanying bulletins in conjunction with **Oxford and IBH Publishing** New Delhi.

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Vegetation/Forestry

The **Forest Survey of India** was established in 1981 and is responsible for the creation of a digital National Forest Inventory system. It updates a national forest vegetation map every two years and carries out thematic and vegetation mapping using image analysis.

Other vegetation mapping is carried out by the **Institut Français de Pondichéry (IFP)** who published a series of maps between 1960 and 1978 at 1:1,000,000 scale using IMW sheet lines which cover much of the subcontinent. **IFP** is also publishing a 1:250,000 scale *Forest map of South India*, in association with State Forest Departments, and larger scale forest, soil and land use maps of a few Indian national park areas. An environmental GIS has been established for the Western Ghats. Other areas of South East and South Asia have also been mapped by **IFP**, including bioclimatic mapping in conjunction with its associated vegetation survey agencies elsewhere in the region and in France.

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Thematic

The **India Meteorological Department (IMD)** publishes climatological and rainfall atlases, and the **Indian Institute of Tropical Meteorology (IITM)**, Pune, has also issued climatological mapping in the 1990s.

Other public organizations producing mapping at a national level include the **Town and Country Planning Organization**, the **Central Board on Irrigation and Power (CBIP)** (compiling irrigation and power maps and atlases) the **Ministry of Agriculture** (agricultural atlases) and the **Central Pollution Control Board**, who produced a water quality atlas of the country in 1994. There has also been a long tradition of regional thematic atlas publication, in particular involving the compilation of agricultural, resources and planning atlases. The most recent example of the genre is the ongoing *Planning atlas of Haryana*, two volumes of which were published in 1993 and 1996.

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Atlas

The **National Atlas and Thematic Mapping Organization (NATMO)** was founded in 1956 and redesignated as **NATMO** in 1978 with broad responsibilities for the thematic mapping of India. Its main task is the compilation, maintenance and publication of the *National atlas of India*. The preliminary Hindi edition was completed in 1957, and for the next 25 years emphasis shifted towards the compilation of the English language edition which was completed and published in eight bound volumes in 1982. The atlas comprises 300 plates with a comprehensive thematic range published at scales between 1:1,000,000 and 1:6,000,000. Maps are either on regular sheet lines or cover a state and the emphasis is upon the agricultural resources of the country. Each plate may also be acquired as an individual sheet. Since 1982 effort has been devoted to the revision of certain sheets in the atlas, and the publication of a widening range of mapping. Other thematic atlases are published, often drawing together material also found in the *National atlas*, and covering topics such as irrigation, water resources, agriculture and forest resources. A tourist atlas of the country is available in hardback or paperback versions. Bengali and Hindi language maps are also issued and a series of applied 1:6,000,000 scale themes is in progress, for example covering air pollution and natural hazards. **NATMO** has also carried out land use mapping of development blocks. About 60 sheets have been published, most at 1:50,000 scale. A few medium-scale landform maps have been published. The latest initiative is a series of *District planning maps*, published at 1:250,000 scale, and showing basic divisions of land use, with many smaller scale thematic insets covering a wide variety of themes also included on each sheet. Over 100 of these maps are planned. From 1997 **NATMO** has been establishing digital mapping flowlines and planning several new projects, notably the publication of a satellite atlas of India and a health atlas of the country.

There is also a long-established tradition for the publication of gazetteers. These comprise detailed descriptions of places in an area or district.

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Cadaster

Among other maps produced by **SI** are small-scale road and tourist maps of the country, 1:1,000,000 scale state maps and the Indian sheets in the *International map of the World* and the *World aeronautical chart*. Twenty-one sheets conforming to IMW specifications are maintained and ICAO aeronautical editions of these sheets are regularly revised. A road map at 1:2,500,000 scale is revised every two years, and a motoring map at 1:4,000,000 scale is also produced.

SI also compiles large scale urban coverage, including a series of town guide maps of all the major urban centers. Large-scale mapping programs for development projects have been commissioned, but no central large scale programs offer systematic coverage. Since 1905 the different Indian states have maintained their own separate organizations responsible for large scale cadastral mapping, which varies greatly in specification across the country. Some states have started to automate procedures, for example Orissa has recently set up a Land Information System to capture and maintain revenue, resettlement and development area data. In contrast very little topographic or thematic mapping of the states has been carried out by local agencies and **SI** maintains a monolithic position in Indian mapping, with most production centralized and carried out at a national level, a very big contrast to other large nations with federal administrative structures.

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Tourist/Reference

Commercial map publishers issue a variety of tourist maps, mostly administrative colored state maps, or urban mapping. These often mirror the tourist coverage from **SI**. The **TTK Pharma Ltd** range is readily available outside India and comprises mostly folded indexed guide maps to states and cities. Amongst overseas published coverage of the country are general maps from British commercial houses **Estate Publications** and **HarperCollins**, from **Nelles Verlag**, **Karto+Grafik (K+G)** and **RV** from Germany and from **International Travel Maps (ITM)** Canada. **Lonely Planet**, Australia recently issued a tourist atlas of India and Bangladesh.

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Census/Demography/Statistics

The **Office of the Registrar General and Census Commissioner of India** carries out census mapping activities in the country, with mapping of census results produced since the 1971 survey. Prior to each decennial census 1.2 million maps of enumeration units are prepared, on a standard size with English and Hindi legends. These are used to prepare jurisdictional, urban schematic and Statistical Unit Area (SUA) maps for the census data collection. Districts, towns and urban data collection units are covered in about 5,000 sheets. Census results are tabulated but are also issued in cartographic form as smaller-scale, single-colour demographic and socio-economic maps published in census atlases. State and union territories are covered in a series of atlases with mapping at 1:2,500,000 and 1:1,000,000 scales, showing data presented down to taluk and tahsil level. A national volume gives 1:5,000,000 scale coverage. Publications relating to the 1981 census are still available, tabulated data from the 1991 census are becoming available and the national volume from the latest census was issued in 1995. Data are presented on the census Web page, including administrative mapping of the different Indian states. It is planned to release data for the 2001 census in digital form.

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