

Business Standard

Landscaping growth with tech

Technology-based planning could unlock trillions in economic activity

Ajay Kumar - |



Land, a vital factor of production, plays a pivotal role in economic growth. For the world's most populous country, escalating pressure on land calls for efficient land management practices. Yet, inefficiencies persist, often due to deep-rooted vested interests. Consequently, the untapped economic potential of land remains suboptimally harnessed. Recent reforms and technology interventions are changing the landscape, though more needs to be done.

Economists emphasise that geospatial information can contribute 0.5 per cent to annual gross domestic product growth. Although Geographic Information System (GIS) as a commercial technology has been available since 1981 when Esri made ArcInfo accessible, its governmental use in India remained limited, except in Gujarat. Narendra Modi, as chief minister, leveraged GIS for spatial planning and decision-making in the 2000s. However, the formation of the National Centre of Geo-informatics, with the

assistance of Bhaskaracharya National Institute for Space Applications and Geo-informatics (BISAG) in 2015, and the subsequent elevation of BISAG into a national institution in 2020, brought about a paradigm shift. GIS started to be seamlessly incorporated into e-governance applications across India. Nevertheless, one limitation persisted: Until 2021, GIS was based on Google Maps as Indian policy did not allow the freedom to create maps.

Peter Drucker's wisdom, "What you cannot measure, you cannot manage", starkly highlights the absurdity of the regressive Map Policy of 2005. This policy, reminiscent of colonial restrictions, imposed burdensome licensing requirements on map-making. Ironically, while Indian entities grappled with these stifling restrictions, Google Earth freely provided high-resolution maps, exposing the folly of the system. Attempts by MapMyIndia, India's first mapping startup, to map India ended with criminal charges in a Kafkaesque legal struggle. In a major reform, geospatial guidelines of February 15, 2021, shattered these barriers, opening doors to unhindered geospatial data collection and transfer. Subsequently, drone rules instituted on August 25, 2021, sanctioned drone surveys, marking a seismic shift in India's mapping framework. If 1991 is remembered as the year of economic liberalisation, 2021 will remain etched as the year of geospatial liberalisation.

GIS has enabled unprecedented social and economic benefits. As has been said, the application of GIS is limited only by the imagination of those who use it. The Svamitva scheme, using drone surveys, provides a record of rights to millions of people in villages. PM Gati Shakti, a GIS-based national masterplan for multimodal connectivity, provides great efficiencies in infrastructure investments. The Ministry of Defence (MoD), the largest land-owning government ministry, with over 177,800 acres of land, mostly in inaccessible areas, completed its land-survey for the first time since independence using satellite and drones. Traditional survey maps were two-dimensional (2D). In hilly or sloping terrain, 2D maps can be inaccurate by 50 per cent in surface area measurement. The use of Lidar, photogrammetry or Structure from Motion techniques allowed creation of 3D GIS maps, extremely pertinent for our remote borders.

Cantonments are now part of metros occupying prime urban land. Established by the British to meet their colonial security needs, these enclaves are not required from a security perspective. On the contrary, there is an additional burden of securing these neighbourhoods from ingress of alien elements. If it is possible to redevelop cantonments retaining essential defence facilities like offices and housing, about 100,000 acres of urban land could be released. Another potential opportunity is streamlining the 2011 MoD security guidelines that restrict construction around any defence establishment, thereby locking acres of private land. Technology-based security measures such as laser sensing, thermal imaging, drone surveillance, video-analytics, and smart lighting offer enhanced security over physical distancing. Reform in these outdated policies alongside modern technology-based planning could unlock trillions in economic activity.

While government entities hold vast expanses of land, there was no centralised database for the same. Initiated in 2015, the effort required persistent dedication over the years, as government entities exhibit

intense land-hoarding tendencies. The Government Land Information System, now developed, contains details on 95,742 parcels of land measuring 384,000 acres. However, the extent of unutilised/under-utilised land remains contentious, with departments/organisations conservatively assessing what can be spared. Technology emerges as a game-changer. In 2021, the Directorate General, Defence Estates (DGDE) under MoD pioneered artificial intelligence or AI-based image analysis technology, providing detailed identification of land-use based on satellite or drone imagery. This technology should be used to assess surplus land. State governments, responsible for managing land resources such as seacoasts, riverbanks, forests, should make extensive use of the aforementioned technology as well.

Governments, despite extensive land holdings, have a penchant for additional acquisitions. Geospatial technology can help intelligently identify available government land before any new acquisitions are made as tried by DGDE. In Arunachal Pradesh, land acquisitions by entities like the Railways have raised concerns, especially because the land prices are fixed administratively and lack market validation. Land prices vary hugely for different types of land — grasslands, rocky, hilly, agricultural, with road access, and so on. Given inaccessible terrain, in the past it was difficult to verify the actual category of land being acquired. The DGDE used AI and satellite imagery to correctly assess land category in recent cases. A framework for land acquisition which develops on DGDE experience could bring greater efficiency in government acquisitions.

Thousands of acres of government land have been encroached upon over the years. Such adverse possession becomes difficult to evict if the encroachments are not detected early. An AI-based system, which uses satellite imagery and longitudinal image analysis, can help here. It ensures timely detection of encroachments and unauthorised constructions. Continuous surveillance acts as a deterrent for potential encroachers. These technologies have been deployed in cantonments. An institutional mechanism needs to be put in place for its rollout in municipal bodies throughout the country.

Technology, coupled with enabling policies, can upend entrenched interests in land and significantly contribute to the vision of Viksit Bharat.

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First Published: Jan 18 2024 | 8:56 PM IST

Page URL :https://www.business-standard.com/opinion/columns/landscaping-growth-with-tech-124011801014_1.html