



Bangladesh Needs Rural Planning To Safeguard Cropland And Sustainable Development

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In Bangladesh, buildings are being propped up along rural roads, as more and more agricultural land is being used for residential and commercial purposes.

In villages across the countryside, long rows of shopfronts on both sides of the road are a common sight. The shutters open right at or a mere couple of meters away from bitumen roads.

Traffic congestion, an issue Dhaka already grapples with, could become a huge problem in other areas as well. Additionally, any future road-widening work would require resettlement and compensation. This conversion is taking place with no planning involved. There is an urgent need to pay due consideration to these eventualities.

The Government of Bangladesh has made significant progress in its road and infrastructure development in the last few decades, with newly built multilane expressways increasing accessibility across the country. While this emphasis on wide, multilane roads and capital and divisional town planning is commendable, rural land use planning remains largely overlooked.

The rural economy of Bangladesh, specifically agriculture, is a powerful driver of poverty reduction in the country. However, as cropland use changes, arable land is becoming a scarce resource. This has major implications for food production. There is a need to invest in optimum agricultural land use and land conservation planning.

Changing Rural Landscapes

It is concerning that houses are being built on fertile agricultural land, a minimal resource, in villages across the country. Once converted to other uses, restoring agricultural land – or forest land for that matter – to a productive former state is extremely difficult.

As rural populations grow, the number of houses being built has multiplied. Such haphazard construction is affecting village ecosystems and disrupting normal functioning. In cases where houses are built on low floodplains or canal banks, residents face significant challenges – stream bank erosion, inundation, and obstruction of water flow, among others.

As buildings and retaining walls are constructed on both sides of the roads, water flow is impeded. During heavy rains, water can accumulate, causing temporary waterlogging and, among other things, causing roads to break down quickly. There is also the effect on the environment – natural habitats and their connectivity are disrupted and crowded built environments contribute to air and noise pollution.

For the government, ensuring road and electricity connections to build houses in scattered places is challenging and expensive. This impacts community facilities and well-being. If construction in rural Bangladesh continues at its current pace, it is likely that some areas will be left without spaces for rest and recreation. Detailed spatial land use planning is, therefore, a must.

Spatial Land Use Planning

Detailed spatial land use planning is the adoption and guidance of an integrated detailed development programme based on the needs and topography of an area. An essential part of any such plan is to ensure equal civil opportunities and privileges for people.

Spatial land use planning is usually done to ensure the proper use of land resources in infrastructure while taking social and environmental development into account. It is often government authorities who formulate, regulate, and implement planning, with local authorities dividing a given area into sub-regions or thematic development areas. This scientific approach can be adopted for all types of development management and supervision of building construction. Zoned thematic development areas provide the basis for legislation and define specific land uses for orderly development, environmental protection, livelihood development, natural resource conservation, and social cohesion while balancing these with economic priorities.

While the initial step of classifying land for optimum use is key, determining the priority of land uses through a consensus-based decision-making approach involving

experts and residents is also crucial. With the help of land use planners, local people can decide where to build residential areas in a given village, where to place their markets and schools, and how much land to allocate to roads.

The detailed land-use planning process for Bangladesh's rural areas must be part of an iterative and ongoing process that prioritizes sustainable development. The need for up-to-date information on how much of our finite land has changed to urban landscapes is ever-increasing.

How Geospatial Technologies Help

Information technologies make spatial planning and management of natural resources easier. Geographic information systems (GIS) use earth observation (EO) data to analyse geographically referenced information. These allow complex assessments of situations, providing bases for the adoption of precise and scientifically grounded decisions for land use. They can provide alternative scenarios, model possible future changes, and support risk assessment.

GIS can integrate diverse EO images, spatial data (including land cover maps), and information on how human activities have affected land use over decades. This enables comparison between past and present states of a given stretch of land. GIS makes it possible to project and analyze how anthropogenic changes will affect land use and land cover in the future. It can be used to develop suitability maps by analyzing soil type, slope, water availability, and proximity to infrastructure, which will be essential to inform land use development, natural resource management, and engineering applications.

Bangladesh has been receiving technical support in developing and adopting a national land cover monitoring system to track such land cover change through a joint project of NASA and USAID. The project, SERVIR-HKH, is implemented across the Hindu Kush Himalayan (HKH) region, prioritizing work in Afghanistan, Bangladesh, Myanmar, Nepal, and Pakistan, by the International Centre for Integrated Mountain Development (ICIMOD). The land cover monitoring system makes use of freely available satellite imagery to generate land cover maps on an annual basis using a harmonized and consistent classification system. Such maps and data can be used to supplement information for land use planning.

As one of the world's most flood-prone countries, Bangladesh also needs flood risk and flood shelter suitability maps for different flood scenarios. We have the technology to not just identify suitable sites for the construction of roads and infrastructure, but also for flood shelters. GIS provides decision makers the information they need to choose sites that do not encroach on productive land, are not at risk of being submerged in floodwaters, and are within easy access.

Possible Models

Little attention has been paid to protecting agricultural land that enables long-term food security and provides essential environmental benefits. Still little, if any, consideration seems to have been paid to the fact that villages can be attractive for people to live in. Even in urban settings, houses continue to be built haphazardly, there is a lack of access to many basic services, and planning rules are not followed. Across residential locations in Bangladesh, roads, playgrounds, and civic amenities need appropriate proportioning.

A strategic approach to land use planning could involve selecting specific sub-units of districts (known as upazilas in Bangladesh) for planning as 'model locations'. Learning and experiences from these locations could help future planning in other parts of the country. In addition, they could guide a long-

term strategic approach for Bangladesh's rural areas to regulate land use with minimal loss of agricultural land. The Local Government Engineering Department, for instance, may work at the upazila level with the Department of Agriculture and the Bangladesh Forest Department on detailed land use plans and get them approved by the Union Council. These land use plans could then be reviewed and revised occasionally.

Rural land use planning can prevent the country's fertile agricultural land from being converted into unplanned residential areas. It can also control heavy pressure on land. Appropriate and effective planning, implementation, and management can ensure rural development that is sustainable with significantly minimized negative impacts on the environment and on local communities.



Figure 1: Satellite images showing how human activities have affected land use over decades.