

## Sustainable infrastructure: Indian scenario and the way ahead

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It is a world-wide phenomenon including India that the population concentration is rapidly leaning towards the urban centres. This process is here to stay because of the way economic activities are increasing in urban areas, and hence the employment opportunities are converging to selected cities. It is an opportunity to build and provide sustainable infrastructure across the country.



According to a report by ADB, about 55 percent of Asia-Pacific's population live in the urban areas, and it is the world's fastest urbanising region. The city infrastructure is needed not only to support the living conditions but also foster commercial activity on a sustainable basis.

### Macro and policy level scenario

At the macro level, the challenge is mostly related to the policy formulation, resource availability, and models of operation. Government has been trying various approaches in different time-frames and planning to get the desired result. We have seen major policy-level changes over the last two decades.

After experimenting with various arrangements, the [Public-Private Partnership \(PPP\)](#) has been found to be the most suitable model to address the challenge of financing projects and ensuring sustainability.

However, the rolling out of PPP projects have not been without challenges. Department of Economic Affairs in their guidelines for the 'Indian Infrastructure Development Fund' have distinctly identified the challenges. Some of the essential concern areas are highlighted as policy and regulatory gaps, lack of long term financing, the capacity gap in public institutions, shortage of workforce in private sector, lack of trustworthy projects and lesser acceptance of PPP by the masses.

If looked at a few components of infrastructure, such as roads and highways, the PPP model is working fine, and the 'user-pay principles ensure the sustainability'. However, the same is not the case with all the projects related to water supply, sewerage, healthcare facilities, housing etc.

In the affordable housing domain, the government is treading on similar lines, and the results are visible. This is essential for achieving the objective of 'Housing for All by 2022'.

To plug-in the gap of technicalities, the administration is more actively engaging consultants and transaction advisors to ensure the quality of projects. Despite that, there is no sufficient availability of technical expertise in the private sphere to meet the demand completely.

### Sustainability for smart cities

It has been seen that the development of smart cities is following the same fundamental principle that focuses on sustainability such as infrastructure, livability, environment or [commercial activities](#).

Despite a unique plan and design for each city, the guidelines have uniformly adhered across locations. Every smart city plan is primarily incorporating the components of natural resource management, biodiversity, green buildings, sewage treatment and recycling, solid waste management, green space, public health and safety, water and air quality, etc.

The city planners take into consideration that how the employment and growth opportunities can be increased by incorporating space for commercial activities, skill development centres etc.

The first project that is undertaken in any smart city is the formation of the central command and control system. In future, this is going to play a pivotal role in ensuring city sustainability. The ICT enabled digitised integration with all the data facilitates in quickly readdressing the problems and prompting the corrective measures on a real-time basis. In addition to this, the city plans are entirely futuristic, taking into consideration all the anticipated changes in demographics as well as economic activities.

### Role of technology

Application of technology in the infrastructure projects will play a pivotal role in future. The government should not show acceptability, but proactively demand and encourage the use of the latest technology that can address the complexity and hence contribute meaningfully in the sustainability of infrastructure projects. Internationally, technology such as [BIM \(Building Information Modelling\)](#) is being used on large infrastructure projects to ensure timely delivery, quality adherence, and controlling the project cost.

With a robust policy formulation, the government can incentivise the use of green technology. Also, while calculating the returns from a big project, the unquantifiable 'green-benefit' can be taken into account and factored in the viability analysis.

### The way ahead

To ensure the sustainability of infrastructure projects, the government is required to encourage greater participation of private investors. This engagement can be fast-tracked by creating a pool of financially sustainable and bankable projects to make it profitable for individual players. Projects cannot have unpredictable revenue streams. The sudden shifts in policy should not adversely impact the on-going and assigned projects, which is a significant reason for many large scale projects hung in the middle of implementation. The participants incur a huge loss, as the exit barrier for such projects is very high. Simultaneously, the operational challenges such as delay in land acquisition, environmental approvals and absence of single-window approval systems should be addressed soon.

In addition to this, the sustainability of infrastructure, especially the city infrastructure depends on citizen participation. We are required to create awareness through advocacy measures for the willingness of people to shell out a reasonable fee for using the infrastructure services which goes for maintenance and enhancements.