

Integrated Development with Large-scale Infrastructures

"Mega infrastructures in sync can transform a society"

In conversation with Dr AFM Saiful Amin, Professor, Civil Engineering Department, BUET

BANGLADESH is expected to be a middle-income country by 2021. To cater to the increased demand of a larger economy, the country's infrastructures need to be developed, operated and maintained adequately. Certainly, small aerodromes will be developed into large airports, large airports into regional hubs, small intersections into large interchanges, small bridges into long expressways, national highways into regional corridors, and so on. Several mega projects are now on the fast track for implementation by the government. Many of these projects will be completed by 2021. Fast track mega projects must have the capacity to transform a society rather than stand as a landmark monument, explains and points out Professor Saiful Amin. But is there a clear plan for how we will integrate operations of these large-scale infrastructures? What is the maintenance plan? Where are the missing links between the projects? Are we addressing those? This interview with Professor Saiful Amin follows these questions, which are absolutely vital in the present context.

Dr Amin elucidates the idea of integrated development with large-scale infrastructures as an ideal situation where each infrastructure will be developed for hand-in-hand operation. For example, the government is building national highways which will also function as regional corridors. To harness the potential of our land ports and sea ports, custom stations need to be developed to a level that can handle bulk movement of export and import goods. When planning to run rail lines along the Padma Bridge, we



must consider constructing connecting railways on both sides of the bridge at the same pace, through the Padma Bridge Rail Link Project. Otherwise, the investment in rail alone on the Padma Bridge Project will remain idle and the country will have to bear investment and operational costs without getting any service. Synchronisation among all infrastructures is crucial. If it does not happen, we will lose the rhythm, opines the expert.

He further emphasises assessment of life cycle cost, which includes initial investment and operational and maintenance costs throughout the lifetime of an infrastructure. It may increase initial costs but results in significantly reduced operating and maintenance costs in the longer term.

Integrated development also includes training of skilled manpower for the construction sector, adds Professor Amin. Globally, we are seeing robust but gradual adoption of ICT in the

construction sector. Bangladesh should follow the metamorphosis in this sector and invest in graduating from labour-intensive construction to ICT-enabled construction. It is not a matter of pride that we have a large reserve of low-cost labour force. If ICT giants such as Google and Apple are involved in mega construction projects, what are we going to do with our unskilled labour? Are they even capable of adopting ICT-based construction technology? We need to ask whether we have an adequate number of capable engineers for the management of big integrated infrastructure projects. Unfortunately, the answer is in the negative. We must first start improving our engineering education to keep pace with the advancement happening globally in the construction sector, recommends Dr Amin.

Finally, integrated development with mega infrastructures requires planning which integrates across all infrastructure projects and resources, ensures their optimal usage and considers the consequences of all possible construction decisions before you make them, shares Professor Amin. He adds that keeping in mind the strategic location of the country, we should also explore the potential of using our infrastructures on a regional level. Thus, Bangladesh's airports can serve as a regional hub for neighbouring Nepal, Bhutan and the seven sister provinces of India. Similarly, development of a deep sea port will save a huge amount of foreign currency of the country as well as attract neighbouring countries to use the port as a regional hub, concludes Professor Amin.

"Mega projects should be part of a long-term development plan"

In conversation with Dr Khan Mahmud Amanat, Professor, Civil Engineering Department, BUET

BANGLADESH government has embarked on several big construction projects such as Padma Bridge, Rooppur Nuclear Power Plant, Payra Port, Dhaka Elevated Expressway and Metro Rail, etc. Successful completion and optimal use of mega projects require long-term planning, cost-effective construction, efficient use and proper maintenance. In a recent conversation with The Daily Star Professor Dr Khan Mahmud Amanat discusses these issues in the context of ongoing construction projects in Bangladesh.

Professor Amanat begins with the remark that a resource-strapped country like Bangladesh should ensure effective use of every single taka of investment in construction projects. He shares that Bangladesh now produces high-quality steel and cement. The government should promote use of local construction materials in the infrastructure projects which will significantly reduce construction cost as well as strengthen the local construction industry and employment. Citing the example of the Karnaphuli tunnel project, he says that tunnel lining blocks are being imported from China which may have increased the cost of the project significantly. These blocks could easily be produced in the country. The government should include a provision of using locally available raw materials in contract documents of all the construction projects, adds Dr Amanat.

To ensure longevity and efficiency of mega infrastructures, regular maintenance and enforcement of traffic rules are essential, opines Professor Amanat. When a small portion of a pavement is damaged, it must be repaired immediately to prevent further damage and to avoid major costly repair work. The government must strictly control movement of over-loaded trucks on the roads. Overloaded vehicles pose high risk for accidents. The brake system in the wheels of a truck is designed for



standard loads. These brake systems are likely to fail when the vehicle carries more than its rated load. The damaging effect of an overloaded vehicle on the durability of a pavement is manifold. Studies show that only 25-percent-overloading (e.g. carrying 25 tonnes instead of the approved 20 tonnes) causes close to three times more damage. Similarly, a 50-percent-overloaded vehicle has the potential of causing five times more damage. To ensure road safety, safeguard our investment and maintain sustainable development, no overloaded vehicles should be allowed to ply on the roads.

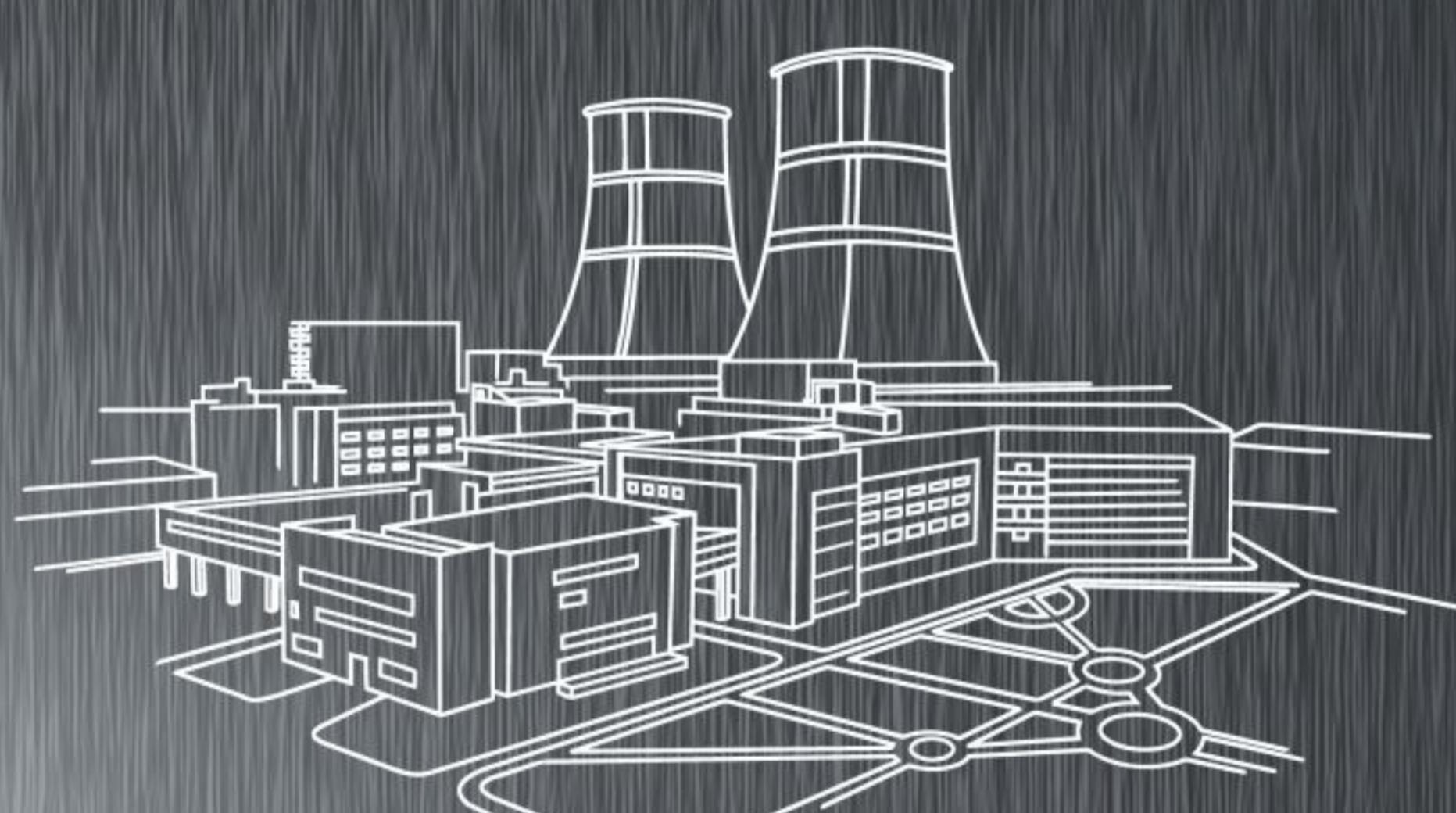
Mega construction projects provide an excellent opportunity for training manpower through technology transfer. Although all the mega projects have some sort of arrangement for facilitating the knowledge transfer process, we're lagging behind due to incompetency of the appointed persons, laments Professor Amanat. Almost in all cases, the appointed persons do not have enough academic background or experience to understand the advanced technology being followed in the mega projects. The attitude towards these appointments is

also problematic. In many situations, it has been observed that the experience gathered through technology transfer process is not given due credit. As a result, the involved person unduly lags behind his/her peers at the time of promotion. Professor Amanat suggests that the government should appoint people who have sufficient background knowledge and aptitude to learn about cutting-edge technology in technology transfer projects.

As a long-term solution to the transportation problem of the country, rail and waterways need to be developed along with roads, highlights Professor Amanat. He hopes that the metro rail project will improve citywide communication and shorten travel time. Generally, a city area grows as a commercial hub when it provides easy connectivity, e.g. through a metro station. Therefore, a long-term plan for urban development of the locality around metro stations should be undertaken to get its benefits to the full extent.

Professor Amanat emphasises on long-term planning for mega infrastructure projects. In many cases it has been observed that decisions on a mega project are taken on political motivation and then a feasibility study is carried out, often forcefully, to justify it. Such practices should be avoided for sustainable growth in future. Mega projects should be undertaken as a part of a long-term development plan. In order to have steady and sustainable development, policymakers must be in consensus about such plans regardless of their political ideology. In preparing the long-term plans, emphasis should be given to the opinion of local experts rather than foreigners. The Rohingya crisis has proved that our country actually does not have a true, unselfish ally. Any foreign prescription for development is likely to serve their cause, or more specifically, their business interests rather than those of our country.

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