

A prosperous future requires pre-emptive planning

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Labour can be controlled, and consistent quality materials can be guaranteed. SPC poles, for example, are prefabricated concrete products with strict quality control and assurance processes before on site installation. Mass scale production is possible. Similarly, in other countries, construction elements like walls, columns, beams, and slabs are prefabricated in certified factories, then transported to the site for installation using mechanical equipment, enabling rapid construction.

BUILDING A RESILIENT AND SUSTAINABLE FUTURE

The time value of construction is crucial. If a house that previously took five years to build can now be completed in one year, the occupants can move in four years earlier. This unlocks productive benefits, giving a significant advantage to the consumer. Construction also becomes less expensive in the long run, even if the initial cost is higher. Old houses in London are still in use, while our houses often need demolition and rebuilding after a relatively short time. Demolition and rebuilding raise the issue of debris management. We need to think about recycling waste to reduce the carbon footprint.

Even in existing constructions, there's a huge opportunity to recycle materials for future prefabricated construction projects, creating a circular economy. Demolition waste management is another area where we need to improve. Recovering and recycling materials brings them back into the construction loop through prefabricated construction. Establishing a back-to-back linkage process in these areas will lead to higher quality construction. People will appreciate engineers for creating durable homes, bridges, and roads that last for generations. Recycling also leads to cost reduction. Materials that are considered zero value today can be reclaimed and sold tomorrow at a nominal value, almost equal to that of a brand-new product. Without recycling, new materials must be purchased at a higher cost, reducing the value addition. The value addition in materials is substantial because they can be reclaimed at minimal cost and sold at maximum cost. However, these recycling loops are not yet fully established in Bangladesh.

Some progress has been made in ready-mix plants, and efforts are being made to encourage this practice, but it is not yet institutionalised. Using recycled concrete as aggregate, for example, could reduce the use of imported stones. Demolished concrete can potentially be used for this purpose. These processes need to be incorporated into the institutional framework. Many people are likely already doing this, but not publicly. Positive work might be happening covertly due to a lack of clear legal frameworks showing the way to practice research findings. Without proper legal



Without foresight, future development becomes costlier and more difficult.

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coverage, good work can sometimes be obscured. Clear national standards for recycling policies would be highly beneficial, outlining how and which materials to recycle. The absence of such policies hinders progress.

EDUCATION FOR SKILLED WORKFORCE DEVELOPMENT

The current generation is moving towards prefabricated construction, which requires a skilled workforce. However, a shortage of skilled workers exists. While there is a workforce, many from the younger generations, like Gen Z and Gen Alpha, are undereducated or informally educated. They demonstrate their capabilities with their existing education, but what is needed is the wisdom of those who have proven successful, blended into an institutional setup. These new generations need to be integrated into a skilled workforce. Comparing the population growth rates of Japan and Bangladesh highlights the issue. Japan has a negative growth rate, while Bangladesh has a positive one. One third of Bangladesh's 171 million population is young, while only 14 percent of Japan's 125 million population is young. In Japan, 0.9 million young people enter quality tertiary education annually, compared to a much lower percentage in Bangladesh. The number of engineers is even smaller. While we take pride in the good graduates produced by a few public and private universities, their numbers are insufficient to meet the

country's prospective needs. A large fraction of small skilled workforce transformation is absorbed by the international market, not keeping a margin for domestic development works. We also export a large fraction of unskilled workers abroad.

We rely on remittances, but how much can we expect from sending our citizens abroad for low-wage jobs? If we could train skilled engineers and other high skilled workers, manpower export would be far more rewarding, and remittances would increase significantly. Currently, we export manpower like raw leather, without adding much value. If we don't address this locally, we cannot fully leverage our demographic dividend. Skill development, from school and college levels through to higher education, is crucial. Without this, manpower export will not be truly rewarding. If we don't prioritise this in the country's interest, we will forever import expensive foreign technologies and foreign experts without developing our own. Even with new technology, we won't have the capacity to understand or manage it without a limited local skilled workforce. Our engineers, even with training, might not be retained due to a lack of domestic capacity.

With a local workforce, we could learn more and enhance our technology absorption capacity. The next time, we wouldn't need to buy technology – we could build it locally, using local materials and manpower. Bangladesh's construction costs are significantly higher than in many other countries, primarily because we import almost everything, including stones.

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and materials, developing our local manpower is essential. Demonstration projects for every construction undertaking are crucial for our engineers, technologists, and students to absorb technology and handle future projects themselves. A national strategy is needed to upskill them.

INTERNATIONAL RECOGNITION OF ENGINEERING EDUCATION

Engineering education is crucial. The Institution of Engineers, Bangladesh (IEB) is now a full signatory of the Washington Accord, achieved in June 2024. This is a major milestone for engineering in Bangladesh, granting international recognition to our engineering education system at the tertiary level. Accredited programmes in Bangladesh will be recognised in 24 other countries, top influencers in engineering and technology, enabling global mobility for engineers.

We must now focus on upskilling engineers and ensuring their industry exposure in accredited academia with enough industry linkages. Quality and number of workforce, both matter. Mandatory internships and real-world learning experiences are key to achieving this. Without a skilled workforce and sustainable infrastructure development, we will struggle to build a prosperous future. The challenges are significant, but the opportunities are greater. By embracing innovation and investing in people, we can create a sustainable and thriving Bangladesh for generations to come.

Transcribed by Monorom Polok.



A holistic approach to land acquisition, transport planning, and material use will support Bangladesh's long-term development.

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