## 'Safe housing should be part of education'

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

S the development of the country progresses, the need for awareness regarding infrastructure operation, maintenance and safety has become critical. At the same time, the issue of higher education—the quantity and quality of engineering professionals and the innovation that they can bring to the knowledge domain-now needs attention.

Professor Dr AFM Saiful Amin, explains how the benefits of awareness regarding safe construction can be seen both in tangible and intangible terms. We would not only see increased awareness regarding the use of materials and better maintenance and proper use when it comes to public infrastructure, but would also foster more discussions, debates and research.

## Mass education and awareness

Dr Amin opines that in terms of awareness there can be no alternative to mass education. Bangladesh today boasts an adult literacy rate of 72.76 percentage (UNESCO). This is the time to take the opportunity to redefine literacy and introduce aspects of safe housing in schools. "You can teach students about what makes housing unsafe, the need for proper foundations so that the building can withstand its own weight and also about safety from natural disasters," he says.

Dr Amin says that most people still lack awareness. So, only introduction of these topics at the school and college level will not do-for adults, mass awareness programmes are needed. The benefits will not be immediate. But, as he says: "If people are aware of the issues, they will learn to demand for safe construction practices and proper planning." Users will understand the need for expert engineers and technicians, the importance of using proper materials in construction, and of maintenance.

"For public infrastructure, like roads and bridges, people will start feeling a better sense of ownership, and thus use these properly," he says. Even though the scope of public construction is massive, general people usually do not have a say in these, says Dr Amin. They are, in effect, just users. "Mass awareness is needed so that people feel a sense of ownership. Without ownership issues like bridge overloading, misuse of roads, will continue," he says.

"For example, operation and maintenance of metro rail, a new mode of transport will be a challenge without mass awareness. In Singapore, they had to ban chewing gum after they

noticed that gum litter was disrupting the smooth running of the mass rapid transit (MRT) trains. It was possible to implement the ban because the country is small." For us, we need to bring these issues under education, to ensure proper use and maintenance.

We have already lost some things due to lack of awareness. "Today, we drive on the wrong side of the road, do not maintain lanes, use horns indiscriminately—these are things which will take time to fix," says Dr Amin.

With education will also come the awareness regarding proper use of material in construction. "Use of steel in construction may increase as steel and concrete will compete in the our market in the near future. Today use of concrete is higher because the initial

important. For that we need to develop the quality and quantity of institutions of higher learning across the country," says Dr Amin. He explains that the number of quality engineers we create is not enough for our demand. So now we gradually have to depend heavily on foreign engineers for mega-projects. "In the '80s Malaysia used to take engineers from us, now they are self sufficient. It took them 20-30 years-they invested in this area. If we take initiatives now, we can do this coming days."

Maintenance and a culture of safety In our country, if we look around, we frequently see houses with rods sticking out of the roofs. "This shows that we are planning and designing more than our capacity. We build two stories, and then

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**Dr AFM Saiful Amin** 

cost of steel is higher than concrete. But taking into account the lifecycle cost, steel is ultimately cheaper than concrete in several projects." With education, people will start understanding these things, Dr Amin says.

## Role of universities and research The issue of what role universities can

play also needs much thought according to Dr Amin. "There are two paths we can follow. One is to be reliant on foreign technology, which we can get through buying them. The other is to research and creation on our own," he says. But we cannot start from scratch. Dr Amin says: "We need a research pool which can grasp foreign technology, which is aware of the trends. So if we bring something from outside, they can understand and adapt the technology for us."

"We have not been able to develop enough quality engineering institutions across the country. What level of engineers are we creating? Technical knowhow is not enough unless our engineers can innovate in the knowledge domain. Development of skill is

when we have money, we extend another floor. So, where is the budget for maintenance?" asks Dr Amin. "Maintenance is just not in our outlook-in both public and private constructions. We have very little budget for it. To even have that budget, we need awareness."

So, due to lack of regular maintenance and minimal cost, we usually have to go for large maintenances at large costs when a service breakdown occurs. The same goes for use of proper materials during construction—owners and construction workers, to save money, end up using low quality material, and later are forced to go for costly maintenances.

"We must understand training labourers might mean higher wages, but the money stays within the economy. Otherwise, the money will go outside our economy, and we might have to eventually even hire construction workers from outside the country," he says.

"In the long term," says Dr Amin, "the costs will actually go down if we can incorporate the issue of safe housing in the knowledge based domain,

## Cement consumption to grow steadily

STAFF CORRESPONDENT

THE future of Bangladesh's cement sector looks strong as the country is urbanising fast on the back of people's improved living standard and increasing purchasing power. An increasing number of people are using cement today to build new homes and for upgrading the old ones, while industrial and various large infrastructure projects are also gaining momentum, boosting the growth of the key construction material.

"In Bangladesh, semi-urban areas are becoming urban and rural areas are becoming semi-urban," says Fahima Shahadat, head of infrastructure and technical services of LafargeHolcim Bangladesh Ltd. She says high-rise buildings are being constructed in urban areas across the country and they need more quality and durable cement.

Although people only talk about large projects when they talk about the cement sector's growth, it is the individual house building sector that consumes most of it. Currently, infrastructure projects account for 20 to 22 percent of cement consumption, the industrial sector 25 percent, and the rest is the retail sector, according to industry professionals. The country experienced faster urbanisation than South Asia as a whole between 2000 and 2010, according to a 2015 World Bank report.

Although as many as 76 cement manufacturing companies have been established in Bangladesh, some 45 large- and small-scale companies are producing cement.

In 2017, the active plants' effective capacity stood at about 50.20 million tonnes. It is forecasted that total cement production capacity will reach 80 million tonnes by 2019.

Annual consumption of cement stood at about 27.10 million tonnes in Bangladesh last year. The demand is expected to grow 8 to 10 percent per year in the next five years, says Masud Khan, chief executive officer of Crown Cement Group.

About 20 years back, the industry used to produce only ordinary portland cement using 95 to 96 percent clinker. Subsequently composite cement emerged, adding components like fly ash, slag and limestone.

"We are producing verities of highquality cement. Besides, producers are bringing in modern technology, making the manufacturing process more efficient," says Amirul Haque, managing director of Premier Cement, while talking about the recent trends in the sector.

He says Bangladesh relied heavily on imports for cements some 15-20

years ago. "Now, we are self-sufficient. The local companies are producing high quality products competing with multinational companies."

Last year, local companies catered to 82 percent of the demand while foreign companies delivered the rest 18 percent. Most companies doubled their capacity in 2013-14 anticipating that there will be a lot of demand given the number of mega-projects being undertaken. But the capacities have been under-utilised, as roughly 54 percent of the capacity is being used.

But despite the huge growth of the industry, Bangladesh is still one of the lowest consumers of cement products in the world. Per capita cement consumption in Bangladesh is about 164 kg, while it is 1,700 kg in China, 1,250 kg in South Korea, 800 kg in Malaysia, 500 kg in Thailand, 270 kg in Myanmar, and 312 kg in India.

Among the challenges include the large gap between demand and capac-

ing. The main ingredients for cement include clinker, gypsum and fly ash. Clinker is the prime raw material. Only two companies have clinker production facilities at their plants: Chhatak Cement Factory Ltd, a government owned company, and Lafarge Surma Cement Ltd.

Lafarge Surma Bangladesh produces 1.3 million tonnes to 1.4 million tonnes of clinker a year, accounting for 10 percent of the yearly market demand. Bangladesh imports 14 million to 16 million tonnes of clinker every year.

Cement-makers say cement is a low margin product so any increase in cost affects the profitability. Clinker, slag and gypsum prices all have gone up recently. Clinker price has gone up by USD 10 per tonne to USD 54 in the last one year. Slag price went up by USD 5 per tonne in the last three months. Freight cost has gone up and the congestion at the Chittagong Port is also



ity. As a result, the intense competition among too many makers is getting worse day by day. "The market is oversaturated and yet the big players are on an expansion spree," says Khan of Crown Cement. Other challenges, according to Khan, include the recent price hike of raw materials, severe port congestion that causes delay in unloading raw materials, the crisis of lighter vessel, the depreciation of the taka against the US dollar, the low retail price and load limit on the roads and highways.

"However, lowering of import duty on raw materials of cement and incentive on export of cement may contribute further to this rising sector," he says.

Although Bangladesh is selfsufficient in cement production, it needs to import almost all the raw materials used in cement manufactur-

affecting the production cost. If gas and electricity prices go up again it will also affect the sector, industry professionals say.

Cement-makers also face challenges in transporting the construction material to the sites of infrastructure projects in the remote areas. For example, contractors of the Rooppur nuclear power plant are asking for 1,000 tonnes of cement every day, but companies are being able to supply 500 tonnes to 600 tonnes because it takes more time to take the construction material to the site. LafargeHolcim Bangladesh has introduced a customised cement product for the nuclear power plant project, says Fahima Shahadat.

Today, Bangladesh also exports cements, but the quantity is insignificant. In 2015-16, cement exports fetched USD 1.71 million.

