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Healthcare without basic hygiene?

Govt must be able to ensure minimum standards in health facilities

TO say that the healthcare system of Bangladesh has taken a battering over the last few years would be an understatement. We all remember the dark days at the height of the pandemic, when families of patients infected with Covid-19 desperately struggled to find space in hospitals. During that time, we found one thing to be the irrevocable truth – that basic hygiene in medical facilities is a matter of life and death, as any spreading of infection there could be very dangerous.

Yet, it seems this lesson has either already been forgotten or it was never put into place. According to the latest Joint Monitoring Programme (JMP) report by WHO and UNICEF, 62 percent of healthcare facilities in the country still lack basic hygiene. The situation is especially bad in government facilities, where only 32 percent had basic hygiene services. The report warned that this state of affairs could be lethal for vulnerable patients, especially newborns and mothers.

The picture is equally bleak in terms of waste management. Only 34 percent of the facilities offer basic waste management services, and around 14 percent do not have them at all. This is especially worrying given that a huge amount of medical waste is generated every day. We have, on multiple occasions, reported on the repercussions of mismanagement of waste from healthcare facilities. It is not just bad for the environment; there is also a lucrative business surrounding its recycling where thousands of waste pickers, including children, wash blood, pus and chemicals and handle other toxic materials in the absence of proper waste management services.

In a country that spends billions of dollars on large-scale development projects, how is it possible that healthcare facilities are not being able to meet minimum standards of basic hygiene and waste management? Are the authorities, especially in the ministry of health, at all concerned that government facilities are doing much worse in meeting these standards? The situation is all the more concerning when one considers the fact that only six percent of non-government healthcare facilities actually have functioning medical licenses. While 59 percent have at least applied for license, 35 percent have not even bothered to register themselves in any way, and are operating without any oversight or transparency.

Only this week, the DGHS found a rise in the population of Aedes mosquitoes, sparking fears of an even bigger wave of dengue in the coming days. Earlier this year, the capital witnessed an outbreak of cholera. On top of that, the ever-increasing costs of living mean that people are even less likely to be able to spend on expensive medical care. In such a scenario, it is essential that the authorities do everything in their power to ensure that medical patients are not being let down in healthcare facilities because minimum standards are not being met.

Will fixing prices of essentials work?

Regular market monitoring and quick action are vital

THE commerce ministry's decision to fix the prices of nine commodities has, perhaps justifiably, met with guarded optimism. Although some consider it a step in the right direction, given constant fluctuations in prices and their uncontrollably upward movement over the last few months, others have cast doubt over the rationality and effectiveness of such a move. But there is no doubt that existing strategies are not working. A stronger intervention has been needed. Whether artificially setting prices is the right way to go is the question.

According to media reports, the ministry has cited price manipulation by unscrupulous traders as the reason for choosing to determine the prices of nine commodities – including rice, lentil, flour, atta and onion as well as mild steel products and cement – within 15 days. Already, Bangladesh Trade and Tariff Commission (BTTC) fixes the prices of edible oil and sugar after periodic market reviews. It will follow the same pricing method for the remaining commodities. Anyone charging more than the fixed prices will reportedly not only be fined but also sued.

Credible doubts, however, remain over the ability of the government to monitor the market for potential breaches of the price-cap regulation or impose said punishment. Our experience with previous attempts to check hoarding and overpricing or fine dishonest traders leaves little room for hope. Such raids were too few and too uncoordinated to have an impact on prices. Also, unlike some imported goods such as edible oil and sugar, it will be difficult to fix the prices of commodities like rice "because of wide varieties of the staple and the fact that the government does not have the exact data on its production and stock," as per an expert. This, he said, could lead to a supply crunch, causing further problems. He suggested that the government should rather strengthen market monitoring to keep prices stable.

However, stability will mean nothing if the bar at which prices are presently set remain high. The latest decision comes amid concerns that people are not getting the benefit of reduced prices of some goods in the global market, and are being charged exorbitantly high even for a minuscule increase in international prices. According to the Trading Corporation of Bangladesh, in the past one month, the prices of rice have increased by up to 15.13 percent, the price of atta increased by up to 28 percent, and the price of sugar rose by nearly 10 percent. All other commodities have also seen a similar pattern of price increase, despite various efforts from the government to bring it down.

Clearly, we need drastic action. But the government must also be judicious, proactive and firm in pursuing its policies and ensure that all relevant agencies and ministries work in collaboration for a wider impact.

What role should universities play in innovation and start-up culture?



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THE government's "Perspective Plan of Bangladesh 2021-2041" has identified innovation as a key enabler to accelerate our economic growth. It aims at increasing the contribution of total factor productivity (TFP) to economic growth from the current 0.3 percent to 4.5 percent in 2041. Any improvement in TFP contribution essentially requires technological innovation, leading to the commercialisation of research results and ideas in the form of products, processes, services, etc. Indeed, as Robert Solow – the 1987 Nobel Prize winner in economics – states, "Technological innovation is the ultimate source of productivity and economic growth."

In Bangladesh, considerable groundwork has been done at the national level in the last few years to promote innovation by establishing a start-up infrastructure. This has led to notable success in creating a good number of start-ups, including the birth of a unicorn, bKash. A 2022 report by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) on the assessment of the start-up ecosystem in Bangladesh has identified a number of issues that need addressing in order to further enhance the ecosystem. The recommendations in the report include, among others, the development of a steady pipeline of innovators, and involvement of universities in our innovation drive.

The main players in a country's innovation ecosystem include the government, private sector, universities, and financiers. The role of universities in creating innovation is vital. However, universities in our country are yet to play their due role in innovation. The innovation ecosystem leading to the birth of start-ups is almost non-existent in our universities, except for a few that recently started putting efforts in this direction.

Many universities in the US are well-known for their great success in innovation. The legendary achievements made by Stanford University (giving rise to Silicon Valley) and MIT (creating Kendall Square) are well-known. Universities making great



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success elsewhere in the world include Cambridge University, Imperial College London, Oxford University, Technion University, ETH Zurich, National University of Singapore, etc. Many other universities around the globe are currently putting a great deal of effort into innovation.

The extent of contribution that university-led innovation can make is evident from a couple of examples. A 2009 report shows that MIT alumni founded 25,800 active companies that created employment for about 3.3 million people, generating annual revenues of USD 2 trillion. If this is compared with the GDP of the richest countries, then the contribution of MIT's innovation would be equivalent to the 11th largest economy in the world. Similarly, Stanford University alumni founded 39,900 active companies (2011 report). These companies created an estimated 5.4 million jobs and generated annual revenues of USD 2.7 trillion, which would be equivalent to the world's 10th largest economy.

The MIT Sloan School of Management defines innovation as: Innovation = Invention x Commercialisation. An "invention" or an idea becomes an "innovation" only when it creates value in the market (through commercialisation and/or creating impact on society). Entrepreneurship is probably the most important factor that drives commercialisation (start-

maximise dynamism and optimise the utilisation of resources and expertise. The world's most innovative universities have a multitude of units/programmes in their ecosystems that support entrepreneurship among their students, faculty members and alumni in a vigorous way. For instance, Stanford University, MIT and UC Berkeley have over 30, 40 and 40 entrepreneurship-related programmes/units respectively.

In addition to the central tech-transfer and related units, academic units like engineering departments/faculties, business/management departments, science departments, etc must play active, interdisciplinary and synergistic roles. They should integrate entrepreneurship efforts through educational curriculum, establishing strong industry-university collaboration, imparting experiential learning to students, leveraging alumni network, and creating networks of mentors and investors. In a successful ecosystem, innovation and incubation, research and development, and teaching and learning go hand-in-hand in a harmonious fashion. Students, faculties and alumni feel encouraged, motivated and facilitated to take their ideas and inventions to the market.

At this juncture, to make Vision 2041 a reality, as articulated in the Perspective Plan of Bangladesh 2021-2041, our universities should put thoughtful efforts into creating effective innovation ecosystems. This requires strong commitment at the highest level of university management. Capacity building of the faculties, students and staff managing innovation, and the creation of university-wide entrepreneurship infrastructure and culture are key factors. Building effective connections with external innovation ecosystems is of paramount importance.

Experience shows that the task at hand is not easy, and not quick. We have to learn from best practices around the world. But copying others may not necessarily always help. Some of our universities should establish research centres to carry out research on how to promote and nurture innovation and entrepreneurship in the context of our culture, economy and sociopolitics. In order to achieve success in creating entrepreneurship and start-up culture, universities require adequate policy and material support from the University Grants Commission (UGC), concerned ministries, departments and agencies. Support and participation of the private sector and financiers are, needless to say, essential.

THE TAIWAN QUESTION

China-US battle for semiconductor supremacy



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IN 2019, while Wuhan was under a brutal Covid-19 lockdown, high-speed trains continued ferrying employees of a USD 24 billion plant that had just begun fabricating semiconductors. This is the Yangtze Memory Technologies Corp (YMTC), one of China's flagship enterprises in its quest for making advanced semiconductors independent of American or European technology.

But fabrication is only one part of the semiconductor or chip value chain. Chip-making is a complex business that involves thousands of technologies, intricate precision equipment, an extremely sophisticated process, and a close network between all the stakeholders. It starts with Electronic Design Automation (EDA) software, followed by the actual design, fabrication, and finally packaging and testing. The fabrication process requires equipment of extreme precision, chemicals in their purest forms, and handling at a subatomic level. Thousands of patents, intellectual property rights, equipment, and intricate collaboration are at play in this process. The players mostly come from the US, Japan, Europe, South Korea, Taiwan and, increasingly, China. However, American sanctions have made it difficult for Chinese companies to access the technology needed to fabricate the most advanced chips, which are smaller than 10 nanometres (nm). Beijing has so far been operating in the low-end market – a situation it wants to change.

While YMTC is spearheading

fabrication, Shanghai's Advanced Micro-Fabrication Equipment (AMEC) is developing sophisticated etching machines. Tianjin-based Hwatsing Technology is producing cutting-edge chemical-mechanical planarisation equipment. At every segment of the value chain, Beijing is aggressively trying to build its capacity. These are all part of Beijing's 2015 "Made in China" industrial policy to improve high-tech design and production know-how, setting a goal of 70 percent self-sufficiency in semiconductors by 2025. Taiwan, the island at the centre of the current Washington-Beijing impasse, is a crucial piece in this geopolitical race for semiconductor supremacy.

Taiwanese fabrication plants – or fabs, as they are known – dominate the semiconductor fabrication or foundry market, earning over 60 percent of global revenue. For advanced chips, the share is a whopping 92 percent. These are the chips that give technological superiority to the most sophisticated defence and other high-tech electronics. Of these plants, the leading one is Taiwan Semiconductor Manufacturing Company (TSMC), the world's largest foundry that supplies chips to top-notch tech and defence firms. TSMC alone earns over 50 percent of global foundry revenue. Because of Taiwan's geography, all its foundries are on the western coast of the island, about 170km off China's Fujian coast.

Let's try to grasp the meaning of the nanometre metric of chip fabrication. One nanometre is one-billionth of a metre. A human hair is around

75,000nm in diameter. The human red blood cells are 6,000-8,000nm across, and the Ebola virus is about 1,500nm long and 50nm wide. A Sars-CoV-2 virus ranges between 50 and 140nm. An advanced semiconductor can pack complex circuits or transistors just 5nm apart! One square millimetre chip accommodates tens of billions of circuits, making it an electronic powerhouse that runs everything from mobile phones to precision-guided missiles.

The semiconductor fabrication process is mind-boggling. It involves vapourising droplets of molten tin with laser blasts. The resulting plasma emits extreme ultraviolet radiation. Mirrors guide the light to a silicon wafer to draw

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circuits spanning 5nm or less – the size of just a few atoms. Currently, TSMC and its South Korean rival Samsung are the only fabs capable of manufacturing the most advanced 5nm chips. Both are preparing for 3nm chips that may go to production anytime.

That's why Taiwan is so crucial for both China and the US. Washington's concern is that if Beijing overruns the fabs, it will cut off American companies

from the supply of advanced chips that run all its military hardware and power the economy. One thing is certain: Washington will cut off the Taiwanese fabs from the global network if it loses control of them. But that won't solve the problem, because its vulnerability will remain. Without advanced semiconductors, the American economy and defence production will grind to a halt. Its military and technological supremacy will be strained to the limit. For instance, each Javelin missile – which has proven quite useful in Ukraine – requires over 200 semiconductors to make. Washington's strategic competitor is building its military muscle within striking distance from the fabs so crucial for its continued superpower status. Concerned, America is encouraging semiconductor fabrication on its own shores through the recently enacted CHIPS Act.

Beijing is also in a precarious situation. Its voracious economy consumes 60 percent of global semiconductor production, more than 90 percent of which comes from overseas or China-based foreign firms. Most of the world's top semiconductor companies are from the US, followed by Europe, South Korea, Taiwan, and Japan. There is none from China, which is a huge obstacle to its plan to build a "world class" army that will beat any enemy anywhere in the world. This is a strategic black hole Beijing cannot afford to have. Besides, control of a major part of the semiconductor value chain will give it significant bargaining power.

But the big question is, will Taiwan's fabs remain intact in case of a conflict? As it appears now, both sides need these fabs to keep producing chips. However, this status will remain only as long as they can't make chips on their own. Until such time, the foundries may save Taiwan from a military onslaught. But for how long?