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**Higher education reforms**

The single most important factor that determines the quality of both undergraduate and postgraduate education is the quality of faculty. At present, only about 25 percent of the faculty members in our universities have PhD degrees, and the ratio of PhD level faculty to student is a dismal 1: 100 approximately. It should be 1: 20, or preferably 1:10.

Clearly, the HEC should have focused on training thousands of bright young men and women at top universities abroad, and then attracting them back through offer of jobs in universities, good salaries, research grants, and access to libraries and equipment. The ex-chairman, Dr Tariq Banuri, did exactly the opposite.

About 50 new universities were established within three years without the availability of additional funding or faculty, bringing standards crashing to the ground. The number of scholars studying abroad dwindled as few scholarships were awarded, while many PhD scholars who returned to Pakistan after training abroad wandered the streets and some even demonstrated outside the Prime Minister’s House.

This was in sharp contrast to the HEC policies during my chairmanship from 2002 to 2008, and which were continued subsequently by the sustained efforts of the chairpersons that followed me. There were five main components of these policies. The first was that if we want to attract the brightest young men and women into education and research, then we must have excellent career structures. Therefore, a new salary structure was introduced based on a contractual system of appointments. Under this system, the salary of a professor was raised so that it became about four times the salary of a federal minister in the government. However, paying weak persons high salaries would have been a national waste of funds. Therefore, the contracts were for three years followed by an international evaluation by experts before contract renewal.

Second, students undergoing training at PhD level in foreign countries could apply for a sizable research grant of up to $100,000 in collaboration with a foreign professor a year before they were scheduled to return. This would provide them with liberal research funds even if they joined a weak university. It also had the benefit of establishing a large number of international linkages.

The third pillar of this policy was access to a digital library with 65,000 books and 25,000 international journals. This greatly facilitated the availability of teaching and research materials. The fourth benefit provided was free access to sophisticated scientific instrumentation available anywhere in the country with HEC paying for the analytical charges. The fifth and perhaps most important facility was that the day they arrived back in Pakistan, the scholars would immediately get jobs as HEC scholars at the assistant professor level for one year, and they would then be placed and absorbed in a suitable university during that year. As a result of these measures, 97.5 percent of students who were sent abroad during 2003-2008 returned back to Pakistan and were absorbed in various universities.

The results of these policies were stunning. The landscape of research started to change rapidly, despite varying support from successive governments. From only about 700 international research publications per year in high quality journals in 2002, the research output rose to about 20,000 international publications annually, overtaking India in 2017 on a per capita basis.

The stage is now set to focus on applied research so that the research faculty that now exists in universities can carry out industrial and agricultural research, thereby helping Pakistan transition to a knowledge economy. Offices of Research and Commercialisation set up under the chairmanship of Dr Javaid Laghari need to be activated again so that the universities may make a meaningful contribution to industry.

One example of the excellent work being done in our research centers is the International Center for Chemical and Biological Sciences (ICCBS) at the University of Karachi. The superb research work being carried out in the Center has been lauded by many visiting Nobel Laureates and eminent scientists. Within the ICCBS is also located the recently established modern Sindh Forensic DNA and Serology Lab, supporting the legal system in the province of Sindh. This forensic laboratory as well as the associated National Center for Virology, and several other institutions were set up through the generous help and support of the Sindh government.

Within this research complex also lies the Jamilur Rahman Center for Genomics Research, established in the name of my father Jamilur Rahman from my personal donation, and has state-of-the-art facilities for genetic analysis. It is able to analyse the genetic changes of coronavirus as it mutates and becomes an increasing world hazard.

During the Covid-19 pandemic, these centers rose to the occasion and conducted over 140,000 PCR based tests, providing key support to national fight against the health crises. The Jamilur Rahman Center for Genome Research is engaged in constant monitoring of the mutational changes in the SARS Cov II virus, thereby keeping a close watch on the emergence of new deadly variants in Pakistan. The ICCBS’s Genome center has carried out complete human genome sequencing of major population groups, and conducted research on rare genetic disorders. In these challenging times, with new mutations of this deadly virus emerging every two or three weeks, it is critically important to monitor these changes.

Most of the HEC policies to ensure improvement in standards of education and research were unfortunately curtailed or dismantled during the last three years, causing a collapse of the entire system. After years of hard effort, we succeeded in establishing the Pakistan Austrian University in Haripur Hazara. Funded by the Khyber Pakhtunkhwa government, it represents a landmark in the development of higher education in Pakistan. A second project of such a foreign university was recently approved under my stewardship in Sialkot while a third is being planned in Islamabad. It is now time to look ahead and rebuild.

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