

## WHERE BILLIONS VANISH

Pervez Hoodbhoy

-----  
Pull quote: *The soft-spoken and diffident Dr. Riazuddin, at 77 years of age, is not only Pakistan's best nuclear and particle physicist, but also a man of great integrity. How could he have wasted Rs 400 million rupees by agreeing to the HEC's folly?*  
-----

General (R) Pervez Musharraf, aided by his trusted lieutenant and chairman of the Higher Education Commission, Dr. Atta-ur-Rahman, lays claim to a “revolutionary program” that has reversed the decades-old decline of Pakistan's universities. The higher education budget shot up from Rs 3.9 billion in 2001-2 to an astounding Rs 33.7 billion in 2006-7. But, in fact, much of this has been consumed by futile projects and mega-wastage. Fantastically expensive scientific equipment, bought for research, often ends up locked away in campuses.

An example: A “Pelletron” accelerator worth Rs.400 million was ordered in 2005 with HEC funds. It eventually landed up at Quaid-e-Azam University, and was installed last month by a team of Americans from the National Electrostatics Corporation that flew in from Wisconsin. But now that it is there and fully operational, nobody – including the current director – has the slightest idea of what research to do with it. Its original proponents are curiously lacking in enthusiasm and are quietly seeking to distance themselves from the project.

Now for the full story: in his article published in Dawn on 25 June 2005, Dr. Atta-ur-Rahman announced the HEC would fund a “5MW Tandem Accelerator” for nuclear physics research with an associated laboratory at Quaid-e-Azam University. It was shocking news. First, nowhere in the world of science is a major project approved without a detailed technical feasibility study, and without full participation of those scientists who would be expected to use it for their research. Second, this machine – whose original form dates back to the 1940's – had long become practically useless for decent nuclear physics research. Whereas it can still be used in certain narrow sub-areas of materials science and biology, to my knowledge there are almost no active researchers in those specialties anywhere in Pakistan.

Immediately upon reading Dr. Atta-ur-Rahman's article, I telephoned him. His answer: Dr. Riazuddin, director of the National Centre for Physics, had approved the machine. That was stunning! The soft-spoken and diffident Dr. Riazuddin, at 77 years of age, is not only Pakistan's best nuclear and particle physicist, but also a man of great integrity. How could he have wasted Rs 400 million rupees by agreeing to the HEC's folly? Why did he sign a flaky “PC-1 proposal” put together in less than an afternoon?

The answer was to come soon. On 8 September 2005 a nation-wide meeting was held in the physics department of Quaid-e-Azam University to look into the possible uses of the Pelletron. But the project's proponents clearly had something else in mind. And it was not a plan of work. They bussed in supporters from near and far who filled the auditorium. Few had even heard of the Pelletron, but they had been instructed to shout in its favour and hoot down all who questioned the need to buy one. I had urged at that meeting that the machine could be purchased but only if some clear scientific purposes was identified. This plea was roundly rejected on grounds that uses would automatically develop once the machine arrives.

When Dr. Riazuddin spoke, he too expressed his reservations and sorrowfully admitted to having signed the PC-1 under pressure. The assembled crowd burst into taunts and jeers. Some demanded that he resign as director. It was depressing to see Pakistan's best scientist and a decent man thus humiliated. It later became known that the push for the Pelletron had come from powerful members of the governing board of the National Centre for Physics, Dr. Samar Mubarakmand and Dr. Ishfaq Ahmad, who are considered to be the nuclear heroes of Pakistan.

The sad part of this story is not that the machine has arrived, but that in the intervening two and a half years the original proponents gave no thought towards making use of it, or to assemble a group of scientists who could be persuaded to do research using the Pelletron. Still sadder, a second Pelletron was purchased, again with HEC money, for Government College University Lahore. No one can fathom what to do with it either.

The equipment fetish can be followed all the way to the much-advertised HEJ Institute for Chemistry. HEJ consumes the lion's share of research funding in Pakistan today and boasts of the finest and most expensive equipment. For example, even good chemistry departments in the US rarely have more than one or two NMR spectrometers but the HEJ Institute has twelve. Well, why not, if that is the price of excellence? Isn't the 3000+ research papers proof of public money well spent?

The answer is, no. There is little evidence to support HEJ's claim that it has strongly impacted the Pakistani pharmaceutical industry. Readers may have more luck than I did in searching the otherwise elaborate HEJ website for its role in discovering new drugs or processes. But without this, all else is hot air. Only one international patent, registered in UK and Germany, is listed. Two processes are mentioned as submitted for a US patent. This is not a high record for an institution that has been in existence for over 40 years and claims to be world-class. A good US or European applied science university department typically files several patents every year.

As for the thousands of HEJ research papers: the question is how many of these really matter? A paper is considered important by other scientists only when it contains new ideas or facts. Significant papers are cited frequently in professional journals. But an overwhelming number of HEJ publications, which are largely based upon routine aspects of natural products chemistry, have zero or few citations. The reader may find citation counts by accessing the free database [scholar.google.com](http://scholar.google.com), or other more comprehensive databases.

My point is not to denigrate the HEJ, or other academic research in Pakistan, but to make the case that such research is consuming a disproportionate amount of resources at the cost of our desperately impoverished educational system. The real problem is that Pakistani students in government schools, colleges, and universities – as well as their teachers – are far below internationally acceptable levels in terms of basic subject understanding.

Current salaries militate against improvement. As a result of Dr. Atta's determined intervention, a professor at a government university can earn up to Rs 325,000 per month but a government school teacher has a maximum salary of less than Rs 10,000. This is highly unwise. Similarly, funds-starved government colleges and schools lack basic infrastructure such as laboratories and libraries but most government universities are awash in so much money that they do not know what to do with it. At QAU, for example, so many airconditioners have been purchased with HEC research funds that the electricity bill has shot up by 50 times over the last six years.

A balance is desperately needed. Instead of over-funding universities and research, we need to focus resources on creating good quality schools and colleges. We need to encourage creative and skilled people to become school and college teachers, and for this we need to pay them well. We need teachers who can educate young people into becoming good citizens and with skills valued in the economy, and who can train the few going on to higher education.

The winds of change are blowing across the country. The Musharraf years are over. It is now time for parliament to carry out a full and complete public inquiry into the irresponsible and crazy policies that have hitherto been the hall-mark of decision-making. Finally there is a chance to reset priorities and use resources for a comprehensive reform of our education system.

*The author is chairman of the physics department at Quaid-e-Azam University. This article was published in Dawn on 9 April 2008.*

### **The HEC responds (Letter to the editor of Dawn , 11-04-2008)**

DR Pervez Hoodbhoy, in his article on HEC programmes (April 9), says Rs400 million has been spent on buying a Pelletron Accelerator for Quaid-i-Azam University (QAU). He has his facts wrong.

The project cost approved for the equipment by the government was Rs166 million and the building cost Rs75 million, under a collaborative project between National Engineering and Scientific Commission (NESCOM) and QAU.

The project was endorsed by the director of the National Centre for Physics (NCP), QAU vice-chancellor and NESCOM chairman Dr Samar Mubarakmand before being considered for funding by the HEC.

A symposium was held in September 2005 in Islamabad, attended by over 120 leading physicists of the country, to discuss the purchase of the accelerator. The physicists almost unanimously rejected the objections raised by Dr Hoodbhoy, and instead endorsed the purchase.

Prof Riazuddin, head of the NCP, wrote to Prof (Dr) Atta-ur-Rahman on Sept 10, 2005 and recommended “the purchase of the Pelletron Atomic Accelerator and the Experimental Physics Labs, which are part of the accelerator facility, as already approved by the HEC and the Planning Commission. For these two projects, funds should be released as soon as possible.”

Prof Riazuddin had copied this letter also to Pakistan’s nuclear scientists Dr Ishfaq Ahmad and Dr Samar Mubarakmand. A copy of this letter is being placed at the HEC website (<http://www.hec.gov.pk/profriazuddin/>).

Further, the recurring and development budget of all 60 public sector universities together is about \$500 million — an average of \$8.3 million per university annually. In any good South Asian university it is 80 to 100 times higher.

Dr Hoodbhoy’s objection that Pakistan is spending too much on higher education is not correct.

Of the national education budget of Rs253 billion for the current year, Rs33 billion is being spent on higher education and Rs220 billion on lower level education — a ratio of 7:1 in favour of lower level education. International norms are about three for lower education versus one for higher education.

The budget for higher education needs to be doubled and the overall budget for education needs to be tripled. Pakistan spends only about two per cent of its GNP on education while Unesco has recommended at least six per cent for

developing countries. The HEC salary structure for Tenure Track System is a contractual basis of appointment in which candidates are evaluated after three years and then after six years before being given permanent jobs. Only about three per cent of university teachers have benefited from this facility because of tough eligibility and selection process. Dr Hoodbhoy has himself applied to QAU for a higher salary under the new tenure track system.

AYESHA IKRAM  
HEC deputy director  
Islamabad

**Riazuddin replies: Clarification about accelerator (Letter to the editor Dawn, 15-04-2008)**

SINCE my name has been mentioned in Dr Pervez Hoodbhoy's article ( April 9) and in the HEC's response (April 11) to that, I wish to clarify the position I had taken as director-general of the National Centre for Physics. First, my letter, as quoted by the HEC, has an important omission: "In the meeting it was felt that one needs to identify more users for this facility within Pakistan besides the ones who presented their proposals for the usage of Pelletron in the symposium".

This, in fact, is the crux of the matter. Nobody, including Dr Hoodbhoy, was against buying the accelerator per se. But what we were concerned about was whether one can make a sensible programme for its use.

It is important to know that the Pelletron, whose earlier version was the Van de Graaf, is now mainly used as a service facility for research in materials science, isotope analysis, etc. It is not used for research in nuclear physics any more.

Therefore, one should know about its potential users and their needs. This is why NCP organised a one-day symposium on Sept 8, 2005. Although I am quoted as saying that we should try and do our best to find users, I was not involved in the subsequent implementation and running of the project.

Now that the Pelletron is being installed, the question arises as to whether the concerns shown by us in the meeting, held over 30 months ago, have been addressed. In fact, this was the main point of Dr Hoodbhoy's article. Perhaps the HEC should ask the persons involved in the project to clarify this.

Finally, the amount quoted by Dr Hoodbhoy is correct since one should include the cost of the associated laboratory (165+ 75 + 164 ), which then adds up to about 400 million.

RIAZUDDIN  
Islamabad