[Atta-ur-Rahman](https://www.thenews.com.pk/writer/atta-ur-rahman)

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**Towards knowledge**

Prime Minister Imran Khan is leading a historic effort aimed at developing a strong knowledge economy. Projects worth about Rs120 billion are in various stages of approval. Some have already been approved and their implementation begun.

These include a Rs12 billion scholarship project of the Knowledge Economy Task Force that is chaired by the prime minister and of which I am vice-chairman. The project is aimed at strengthening the faculty in our universities by sending a large number of our brightest students to top universities abroad. Another Rs6 billion project begun is for introducing a system of blended learning in our universities. To produce citizens with specialized skills, a special Matric Tech programme has been launched as a pilot in about 500 schools so that in the last three years of their education, the matric students are trained in certain specialized skill sets.

Selected key areas that are being given a high national priority in order for Pakistan to make best use of its demographic advantage include Information Technology, Artificial Intelligence, Machine Learning, Robotics, Big Data, Internet of Things. All these topics are based on software development which is relatively low-cost to implement and can take advantage of Pakistan’s large population base. Priority should be given to technical education, high-value agriculture and utilization of natural and energy resources.

We need the educational systems in schools, colleges and universities to be modified to develop problem solving skills, critical thinking and innovation among students at all levels. Minimum quality benchmarks should be set for college, technical and higher education with a focus on adequate faculty qualifications across Pakistan; the quality of curriculum in teaching and research establishments must be raised to international standards in order to support the anticipated growth and expansion of the technological industry created by the knowledge economy.

In addition, a sustained effort is needed to raise the number of high-quality professional scientists, engineers and technically trained manpower to a ratio of 3,000 professionals involved in R&D per million of the population. To achieve this target, at least 10,000 young men and women should be sent for training abroad annually for PhD degrees, post-doctoral positions and industry-related technical training. It is vitally important to ensure that on their return they are absorbed in universities, research organizations and industry. Posts must be created in universities, research centers and industry for freshly trained returnees to Pakistan.

It is critically important that universities and research organizations be restructured so that the brightest scientists and engineers are employed on a contract basis with attractive market-based salaries, clear achievement targets, complete autonomy at work, but with full accountability and regular performance assessment. In this connection, the tenure track contractual system of appointments of faculty with regular international assessment should be made mandatory for all new appointments in universities. The threefold difference between the tenure Ttack system and the BPS system, that has eroded with time, must be revived and maintained.

In parallel with technological institutions, world-class business schools should be established to train managers and develop entrepreneurial skills. A major program should be launched to attract the diaspora of Pakistanis across the world into returning to Pakistan. They should help establish high-quality universities and research centers in Pakistan and support industry in Pakistan and, where possible, return to Pakistan permanently.

Eventually, Pakistan will be able to export high-technology goods with the help of the Pakistanis abroad. Networks covering different high-technology fields should be established among the diaspora abroad to come to a consensus on the best way to guide Pakistan’s knowledge economy for the promotion of high-technology entrepreneurship, and for the transfer of key technologies to Pakistan for the production and export of high-technology products.

The implementation of STIP policies could be greatly facilitated by providing access to venture capital funds and by establishing innovation hubs. In parallel, legal and financial services including assistance with preparing professional business plans should be offered to encourage the formation of more start-up companies.

Research and development activity in the private sector should be extensively promoted by the government through assistance with technology upgrading and manpower training. The absorptive capacity of Pakistan’s government and private institutions to productively use external and internal knowledge and advanced technologies can be increased rapidly by hiring skilled personnel, such as management consultants.

A key area for Pakistan is the encouragement of reverse engineering of products while building facilities for experimentation and R&D. The government must increase investment in the production capabilities of private sector institutions by facilitating the process of adaptive engineering, productivity improvements, employment regeneration and export orientation of manufacturers within Pakistan.

CPEC should focus on the manufacturing and export of medium- and high-technology products, preferably in collaboration with the private sector industry in China. The aim would be to progressively enhance our export to $300 billion/annum over the next ten years. To facilitate this process, technical and vocational training institutions should be set up near each of the specialized industrial hubs.

Businesses that are geared to the manufacture and export of high-technology goods and those that explicitly address the three pillars of the SDGs should be rewarded through tax incentives, matching grants and public procurement policies. Duties and tax structures too should be revised so that there are no taxes on parts needed for manufacture of medium- and high-technology goods, and significant taxes on import of finished products, to encourage basic manufacture.

A revolving National Innovation Fund of at least Rs5 billion should be established to support indigenous technology development. Its purpose would be to facilitate the adoption, adaptation and rapid absorption of key technologies in both public and private sector institutions. NADRA should be digitally linked to the FBR and other key national organisations in order to widen the tax net and raise national tax revenue.

The writer is chairman PM National Task Force on Science and Technology, former minister, and former founding chairman of the HEC.

Email: ibne\_sina@hotmail.com