
HIGHER EDUCATION

Medium Term Development Framework

2005 - 10

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1 Foreword by Chairman HEC

The world has been transformed in the last several decades into one where knowledge is now the engine for socio-economic development, and the importance of natural resources has greatly diminished. The 5 Year Plan for the Higher Education Sector aims at creating the necessary foundations in which excellence can flourish and Pakistan can embark on the road to develop a knowledge economy. There are three major issues which need to be addressed in the context of higher education sector develop programmes: (a) access (b) quality and (c) relevance to national needs.

(a) **Access**: At present only 2.9% of our students aged between 18 – 23 have access to higher education (as compared to 68% of the same age group in Korea!). The present plan aims at doubling the enrolment over the 5 year period by increasing the capacity of existing higher education institutions and, where necessary, establishing new ones.

(b) **Quality**: The present quality of higher education is very low. Not a single university of Pakistan is ranked among the top 500 of the world. A number of steps need to be taken to improve quality which include the following:

(i) ***Faculty Development***: At present out of ~ 7000 faculty members in our universities, only ~ 1700 have Ph.D. degrees. Each of the 60 public sector universities needs to have at least ~ 300 – 400 Ph.D. level faculty members (at least 15 – 20 per

department) before it can be regarded as a genuine “university”. For this purpose an additional 15,000 – 20,000 persons will need to be sent for Ph.D. level training to suitable foreign institutions in fields of national priority over the next five years in order to develop a cadre of highly qualified bright young men and women who can not only carry out teaching and research in universities but also act as consultants to industry. This foreign Ph.D. level training, combined with the indigenous Ph.D. programme and the foreign faculty hiring programme, will provide the core element of quality human resources so necessary for university education.

- (ii) **Infrastructure:** Each public sector university will need its departments to be upgraded in terms of availability of books, journals, scientific equipment, consumables, teaching aids and high speed internet connectivity as well as sports and other facilities to provide the requisite environment for quality education.

International linkages, access to research grants and post-doctoral training programmes will also help to improve quality.

Transition from a 2-year bachelors degree programme to a 4-year degree programme is also important to improve the quality of the end product.

Governance, financial management systems, curricula, examination system, and quality assurance systems will all need to be constantly improved in order to bring the universities to international standards.

The Pakistan Educational Research Network (PERN) will be expanded and its performance further improved so that the materials available on the internet can be readily accessed, and faculty resources can be shared through video-conferencing.

- (c) **Relevance to National Needs:** In order to transform Pakistan from an agriculture-based economy to a “knowledge-economy”, specific projects and programmes have been identified as priority national programmes, after careful consideration of sectoral opportunities strengths and weaknesses, by several hundred experts over the last 8 months. The human resource development effort will be tailored to meet the human resource requirements of these programmes. These include transition of agriculture sector to high value-added agricultural produce, information technology, biotechnology, engineering sciences, pharmaceuticals, material sciences, basic sciences, social sciences, economics, finance and other disciplines. The curricula have already been modified in consultation with subject experts and the private sector to make them relevant to market demands and the needs of the society as well as emerging international opportunities.

The establishment of technology parks, business incubators and funding of joint projects with industry should transform the universities

to creative and vibrant institutions where new ideas are born and transformed into commercial products and processes.

It is high time that Pakistan starts investing massively into its *real* wealth, its youth. The visionary decisions reached by the Chancellor's Committee to increase allocations in respect of development and recurring budgets for the higher education sector by 50% each year (till they reach 1% of GNP for the higher education sector) must be strictly adhered to, if Pakistan is to follow the path of Japan and Korea and develop into a knowledge economy.

This is truly a historic opportunity to rid this country of poverty and hunger and transform it into a dynamic, self-reliant and prosperous nation which can be propelled forward on the strength of the creative talents of about 100 million young men and women below the age of 30.

Inshallah we will succeed!

Prof. Dr. Atta-ur-Rahman

N.I. H.I., S.I., T.I

2 Introduction: The Context

In the modern economy, Institutions of Higher Learning are the pillars on which the edifice of a “Knowledge Based Economy” is built. The Higher Education system in a country is inextricably linked to all aspects of the economy as well as the general education system. Considering the entire issue of development in a holistic manner, it thus becomes apparent that “Higher Education” serves as the engine of change that not only impacts economic development, but also serves to strengthen the entire system of education. The higher education system produces the teachers that are the most critical component of the entire education system, the graduates who power the “knowledge economy,” and the researchers who unleash the power of Critical Thinking. The products of this system then catalyze the development of new products and processes, an imperative in today’s highly competitive industrial world.

All development starts with human development. The acquisition of knowledge and its effective utilization is a key driver of progress. Knowledge must be brought to bear efficiently and productively on all aspects of society, with the goal of enhancing the quality of life of the citizens of Pakistan. With the transformation of the world economy into a knowledge economy it has become evident that human capital is the most important resource of a nation. Due to this reason, the “Tiger Economies” have focused on human resource development, and specifically higher education, to transform into the economic power-houses they are today.

Human capital, and the generation, transmission and application of new knowledge, are as important at the start of this century, as fixed capital or machine power was during the industrial revolution. Indeed, just as the interaction between stable, progressive and innovative higher education and industrial sectors provide for the foundations of a knowledge-based economy, the well-educated graduate is the fundamental building block upon which the social and economic prosperity of a nation lies.

Key factors in the generation of a well-educated workforce are the quality of education imparted to the graduate, access to higher education and its relevance to the economy. The challenge faced in the higher education sector is the provision of an environment conducive to quality education in all the higher education institutions. The faculty, the infrastructure and support provided to the faculty and students for teaching and research, and the efficiency of operation of university programmes, define this environment. Human development, however, can not occur in isolation and must be intricately linked to the current and future priority areas for development. The product of the higher education system is the graduate having the requisite knowledge and skills to drive the “National Development Plans”. It is thus absolutely critical that focus areas of research and development in the Higher Education Institutions are in harmony with the local and national industrial and social development plans.

The intervention strategies of the Higher Education Commission and the respective implementation plans are expected to lead to improved quality of

higher education, as well as improved access to education, while laying the foundations of a strong knowledge-based economy.

3 Mission Statement

The Higher Education Commission will facilitate Institutions of Higher Learning to serve as Engines for the Socio-Economic Development of Pakistan.

4 Perspective

The past year has witnessed the launch of a sea change of initiatives by the Higher Education Commission that have fundamentally altered the higher education landscape. Change is visible in all the universities and degree awarding institutions in Pakistan. There is an excitement in the air in these Institutions, and scholars and researchers are beginning to roam the hallways of knowledge once again. The change is physically manifested in the restored buildings, new classrooms, new laboratories, computers, jogging tracks and state-of-the art libraries. From little things such as the “Monte Carlo inspired” building signs of the Allama-Iqbal University to the MIT inspired domed building of the Umair Basha Institute of Information Technology of Karachi University. New universities, such as the University of Faisalabad and the University of Sargodha, have risen in the heartland of Pakistan; the Balochistan University of Information Technology and Management Sciences provides state-of-the art IT and Management Science education to thousands of students, while Shah Abdul Latif University Khairpur has new laboratory and library buildings. The real success of the HEC development programs is not however manifested in the restored campus buildings and wireless ‘hot spots’, it is visible in the hearts and minds of the faculty and students, who are publishing once again in international journals (up more than 40% in the last two years!), it is apparent on the faces of the students searching the Digital

Library archives to complete a psychology assignment, and was there for all to see at the 1st National University Games in March 2003.

One reason that Universities are set up is so that, “common good, just laws, human reason and prudence might develop and grow (*University of Vienna, Manifesto 1365*)”. The HEC has endeavored to bring this spirit back, which is also our Islamic heritage. Logic, philosophy and Mathematics used to be a hallmark of an ‘Education’. With the elimination of undergraduate education from the universities, and the consolidation of the two-year bachelor degree in Colleges, Universities in Pakistan had ended up merely catering to the provision of post-graduate studies. Education comes from ‘eduction’ which means to make visible what is latent. To be educated really is to have a fire lit inside that allows one to think, rationalize, contemplate on the mysteries of the universe, and understand events and situations to which solutions are proposed. Being educated does not simply mean being able to solve differential equations: it is much more. The world over, universities provide education in all subjects with the first degree imparted after a period of 4 years. This allows the student to explore his/her interests, understand related areas, specialize in core subjects while also developing as a caring, communicative human being who knows how to harness the powers of Information Technology. During the past year numerous Institutions from the University of Sindh to the University of Peshawar have introduced 4–year honours bachelor’s degree programmes, and it is hoped that the students of Biology and Mathematics in Pakistan, may once again understand the message of Iqbal and the power of “Google.”

Since 2001, the Higher Education sector in Pakistan has undergone a dramatic renaissance. The realisation of the Government of Pakistan of the importance of higher education in contributing to sustainable socio-economic development, as well as poverty reduction, stimulated a chain of events that led to the establishment of the Higher Education Commission. Founded by Presidential Ordinance on September 11th, 2002, following the recommendations of the 'Task Force on Higher Education', the Higher Education Commission inherited a higher education system having a myriad of problems. While concrete progress has been made in improving the state of higher education, an impact will only be possible if the reform process that has been initiated is sustained, supported and strengthened.

5 Major Issues

The Higher Education Sector in Pakistan faces numerous challenges in implementing its reform agenda. In this regards the following have been identified as key issues to be addressed:

1. Poor standard of faculty and lack of training / capacity building
2. Low enrollment in higher education
3. Minimal relevance of higher education to national needs and lack of compatibility to International Standards
4. Low quality of research and lack of relevance to national requirements
5. Poor Governance of Universities

6 Our Strategic Vision

This development framework combines our vision for higher education in responding to domestic and global challenges, with the practical steps needed to deliver the HEC's contribution to the reform agenda set out in the HEC Mission document.

1. **Faculty** are the heart and soul of the university, and without an active and well qualified faculty it will not be possible to have meaningful development in this sector.
2. **Faculty development** can not be viewed in isolation and must be considered together with the development of an environment conducive to academics, as well as research and development in the universities. Faculty development programmes must also address factors pertaining to retention of qualified faculty in the public sector higher education institutions.
3. **Institutions of higher learning** are **knowledge repositories** whose faculty and students accrue knowledge and apply it to understand and address "local" issues.
4. An integral role of higher education institutions is in assisting with **policy making** and serving as "**think tanks**" to the public and private sector.
5. Inline with the worldwide paradigm shift from "**Teaching**" to "**Learning**", programs of study will focus on ensuring **maximal absorption** of subject matter by the students.

6. **Faculty training** in **pedagogical, communication** and **ICT skills** is required at all levels to enhance the **efficiency of teaching** in higher education.
7. The higher education system and institutions must accord high priority to ensuring the **quality of services** and **quality of outcomes**. Internal **quality assurance** processes of higher education institutions must be strengthened to conform to **international standards** of quality assurance.
8. While building the higher education sector priority should be given to **recognizing excellence** and **supporting** it.
9. To ensure that reform initiatives are aligned with development objectives, the **engagement** of key **stakeholders** of the higher education sector in the decision making processes is of utmost importance, particularly in ensuring the **relevance** of educational and research programmes to economic imperatives.
10. Changing innovation processes and the evolution of the relative contribution made by the private and public sectors have emphasized the need for strong **industry-university linkages**, allowing both sectors to interact and collaborate on joint projects.
11. Engineers build nations and engineering education must receive priority, especially in engineering disciplines of **immediate economic relevance** to major industry sectors such as:
12. Information and Computerization Technology

- a. Petroleum Sector
 - b. Mining
 - c. Construction
 - d. Textile and Manufacturing
 - e. Engineering Design, etc
 - f. Biotechnology and Nanotechnology.
13. In the modern global knowledge-economy, employers increasingly look to universities and colleges to deliver the **well-educated workforce** they require in the form of **rounded, flexible**, and **readily employable graduates** to remain competitive.
14. A **broad-based** education system is required to ensure that graduates have not only mastered their respective areas of specialization, but are also able to effectively interact with people having a wide variety of backgrounds.
15. Graduates of the higher education system must have the ability to **communicate effectively** both in reading and in writing.
16. In the rapidly changing global economy, the labour market constantly requires new and different skills, requiring mechanisms to be enhanced to allow professionals to upgrade their skills at regular intervals and develop new competencies through **lifelong learning**. Higher education institutions are required therefore to offer learning

opportunities in response to diverse demands and work cooperatively with stakeholders to ensure that the appropriate courses are readily available.

17. **Brain Drain** is a daunting problem for Pakistan. Whilst it is essential to maintain mobility, and a source of intellectual enrichment, measures are to be introduced to encourage Pakistanis to return to their country of origin and to take part in its economic, social and cultural development.
18. The Higher Education sector is a major force for **innovation**. Universities and colleges through local, regional, national and international partnerships must share their expertise and facilities to support socio-economic regeneration and growth.
19. Knowledge creation and diffusion are increasingly important drivers of innovation, sustainable economic growth and social well-being. **Research** is to be reconfirmed as a fundamental activity of institutions and the establishment and long term sustainability of a dynamic research sector in universities, that engages stakeholders in its activities, is key to achieve economic competitiveness.
20. It is widely recognized that **transferring knowledge** effectively is often as important as original scholarship. Incentives are to be provided to ensure that scientists who produce **innovative research** and work to **disseminate** its findings receive recognition and support. In addition, stakeholders who depend on the work of researchers are to be

reassured that the investment of public funding is **sustainable** and directed toward areas of **national interest**.

21. Competitive **research grants** on funding must be available to ensure that the best ideas in area of importance are recognized, and allowed to develop.
22. Opportunities for **collaboration** with the world scholarly community should be provided for both post-graduate students and faculty alike.
23. It is imperative that award of Ph.D. degrees should signify **original contribution** to the world body of knowledge as certified by International experts.
24. Institutions of higher learning should be encouraged and supported to ensure **“productive” research output** and **generate intellectual property** through set up of **technology Industries Centres**.
25. **Universities of technology** should be established to **produce technologists** required by **industry**.
26. **National Centres** in areas of economic importance should be identified and strengthened to top world standards.
27. HEC envisions the universities and institutions of higher learning and research to play a **catalytic** role in the **economic development** of the region in which they are located. Development projects should therefore be initiated with a vision of sustainable economic development in the region in which the Institution is located. .

28. Determined efforts are essential to increase **access** to higher education for under-represented groups. The strategy here will be two-faceted: firstly to promote cultural change in instilling the value of higher education amongst citizens; and secondly to tackle the primary barrier of prohibitive costs of higher education. Distance education and open learning can play a major role in widening access.
29. Extensive access to higher education will first require **optimal** usage of existing **physical infrastructure**. It will be necessary however to invest in equipment, laboratory facilities and space to cater to the demand of **enhanced enrollment**.
30. Modern **information and communications technologies (ICT)** are key to enhancing efficiency, efficacy and impact of programmes of development in the higher education sector.
31. **ICT** must be **effectively leveraged** to deliver **high quality teaching** and **research support** in higher education both **on-campus** and using **distance education, providing access to technical and scholarly information resources**, and **facilitating scholarly communication** between researchers and teachers.
32. Additional **television channels** should be dedicated to the delivery of high-quality distance education programmes.
33. It is necessary to focus on implementation excellence, which will require adoption of **modern project management** and **reporting**

techniques as well as **computerized financial management systems**

34. Allied with the increased demands on higher education by its customers and stakeholders, the sector faces **growing expectations** from government and society as a whole. With increased appropriation of public funds towards higher education come growing demands for **transparency** and that those financial allocations are **well-targeted**.
35. Movements in the global knowledge-society will require universities to develop into **diverse, flexible, self-analytical** and **adaptable** enterprises. Only a sector that is actively engaged in meeting the needs of its stakeholders will be adequately prepared to respond to the accelerated pace of change the global markets will inevitably undergo in the 21st Century.

7 The Role of the HEC

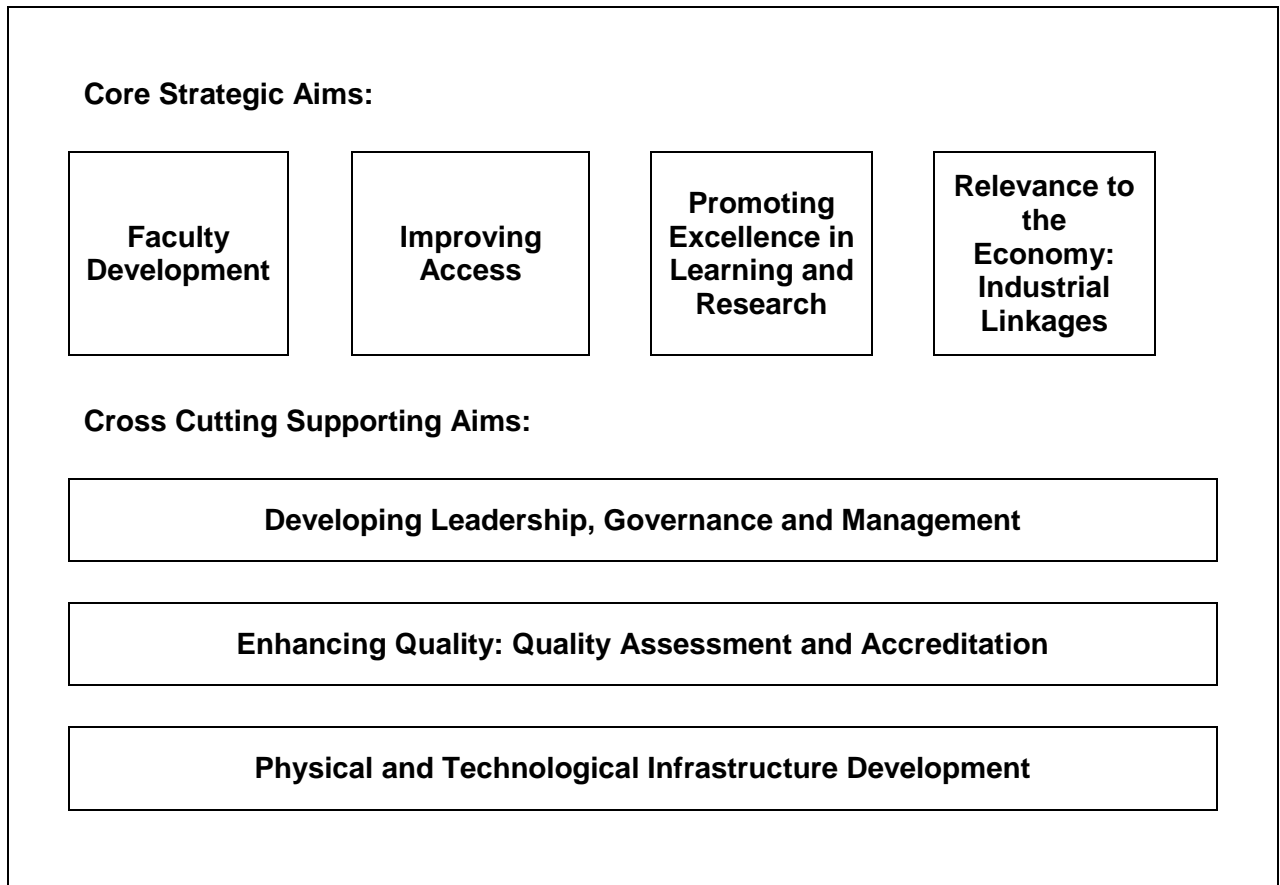
- The Higher Education Commission will be a key driving force for the provision of accessible and world class higher education, so that it can serve as an engine for socio-economic development through linkages with industry, agriculture and defense, thereby enhancing the quality of life for all Pakistanis.
- In our central role to evaluate, improve and promote higher education and research and development, the Higher Education Commission will to continue strive towards formulating policies, guiding principles, and priorities for the promotion of socio-economic development in Pakistan.
- We will balance our priorities in the light of the challenges presented in the contemporary global knowledge-based economy, by gearing our intervention strategies to facilitate the development of Pakistan into an actively participating, prosperous economy.
- We will work with institutions in order to assist them in building institutional capacity, with a particular focus on promoting quality in all aspects of provision and output.
- Through our funding support, we will help to develop a system where excellence in teaching and knowledge transfer is as highly regarded as excellence in research.
- With the cooperation of the Federal and Provincial Governments we will work to ensure that all newly established institutions in both the public and private sector meet prescribed standards of quality.

- We will work to ensure the maximum value of public funds by reviewing and examining the requirements of public sector institutions, and providing funds accordingly for development and research projects based on performance, intellectual merit, and relevance to national requirements.
- We will continue to support the development of university-industry linkages to promote research activity targeted towards economic activities, and introduce educational programmes to meet the demands of industry and the employment market.
- We will continue to determine the equivalence, validity and recognition of local and international degrees, and provide advice to the public on recognized institutions, campuses, and educational programmes.
- We will continue to implement mechanisms for the evaluation of performance of faculty members, and provide guidelines for the minimum criteria for appointment of faculty positions along international norms.
- In order to increase the accessibility of education, we will introduce mechanisms to provide opportunities for students from under-represented groups access to higher education based on individual merit.
- We will provide further opportunities for students in indigenous and foreign fellowship and scholarship programmes, as well as supporting

the conduct and attendance of symposia, conferences and training programmes.

- We will continue to ensure that curricula are modern, challenging and progressive and designed towards the matrix of the global knowledge society.
- We will support innovative ways of delivering lifelong learning, both traditionally and through new technologies.
- We will collect statistics on pertinent aspects of the higher education system, and make information publicly available.
- In our drive to achieve excellence we will continue to ensure value for public money by seeking to make the best use of available resources and securing accountability while recognising institutional autonomy.

8 Strategic Aims



The following sections of the plan set out, for each of the above headings:

1. The **Aim** in full: that is to say, the high-level strategic outcome towards which we are working throughout and beyond the life of this plan.
2. An **Introduction**, providing a commentary outlining the strategic context and challenges faced.
3. The strategic **Objectives** we seek to achieve within the plan period.
4. The **Major Programmes** we will implement as a means to achieving our stated objectives.

5. Key **Performance Indicators** by which we plan to demonstrate, in measurable terms, our progress towards the aim and objectives.

9 Faculty Development

9.1 Aim

To improve the quality of teaching and research support in institutions through targeted programmes to improve the pedagogical skills and qualifications of faculty members.

9.2 Introduction

An institute of higher learning is distinguished by the quality of its faculty. Faculty members are the key determinants of the quality of education, and regrettably, an area where Pakistani universities are particularly weak. It is estimated that only about 25% (average) of the current faculty members hold Ph.D. degrees, whereas the holding of Ph.D degrees is universally considered to be an essential pre-requisite to imparting quality education. It is understood here that while the holding of a Ph.D. degree by a faculty member does not necessarily guarantee quality, the lack of a Ph.D. does, beyond large, present a high barrier to sustained provision of quality education

Teaching in Higher Education is a skilled profession which must be adequately recognised and rewarded. The quality of educational programmes cannot be achieved without the adequate provision of faculty members who are able to demonstrate scholarship in their discipline and a professional approach to its application. Meeting the faculty requirements of institutions through addressing staff deficiencies, as well as assisting in the professional development of current faculty members, and the esteem in which they are

held as teachers within the academic community, are all of great importance in securing our strategic aim.

9.3 Objectives

- To increase the percentage of faculty members holding terminal degree qualifications
- To provide opportunities for the enhancement of qualifications of existing faculty members to Ph.D. or equivalent
- To enhance number of faculty members having advanced qualifications in higher education institutions in fields of relevance
- To provide greater incentives to attract talented individuals to careers in higher education
- To provide training for faculty members on modern pedagogical skills and techniques

9.4 Major Programmes

Faculty development programmes are aimed to address issues of improvement and retention of qualified faculty and the development of an environment conducive to academics, research and development in the universities.

1. The major thrust of programmes being developed by the Higher Education Commission is directed towards developing a strong base of Ph.D. level highly-qualified faculty members. This involves:
 - providing opportunities to existing faculty members through scholarship programmes for increasing the Ph.D. faculty base;

- provision of enhanced facilities to existing Ph.D. qualified faculty to ensure that they have an intellectually stimulating academic career.

Scholarship programmes are being developed for faculty-members to attain Ph.D. degrees both within, as well as, outside the country. Relevant areas, where the ability to provide quality education exists within the country, will be supported to the best possible degree in Pakistan. For other areas, where Pakistan is weak, scholarship programmes are being developed.

2. As scholarship programmes have long gestation periods (their impact will be significant only after 3-4 years after launch), an emphasis is also being placed on the short-term, through the development of faculty training programmes that will enhance the subject knowledge as well as the teaching, communication (including English language comprehension and expression skills), problem analysis, problem solving skills and IT skills.
3. Current faculty deficiencies are also being met through the hiring of faculty from abroad, in short term (1-3 month) and longer-term (1-5 year) appointments.
4. As a significant number of the current PhD-level faculty are due to retire in the next few years, measures are being introduced to re-hire these faculty members on the basis of their productivity.

5. The quality of the student learning experience depends upon the combined experience and skills of a range of staff. We are increasing the rewards for excellent teaching by extending and targeting our funding for human resources strategies
6. Using the National Academy for Higher Education to train faculty in higher education institutions across the country to enhance basic competencies in teaching of the core sciences and mathematics, computer sciences, and functional English (at the B.Sc. and M.Sc. levels) in Pakistani universities and colleges. It will offer training programmes for junior faculty at the level of Lecturers and Assistant Professors. These nine month training courses will be complemented by programmes for short term pedagogical training programmes.
7. To ensure long-term retention of productive faculty in the higher education system, the Higher Education Commission is working to the implement the institutionalization of a "tenure track" system of appointment of faculty members. This system, practiced at most major academic institutions of the world, requires that initial appointment of faculty be on contract, whereas a permanent tenure is only granted upon the recommendation of a group of renowned international peers. The tenure-track system of faculty appointment would be implemented with an attractive salary package, comparable to that offered by the private sector. The holding of a Ph.D. degree would be mandatory for appointment in the tenure track system. It is envisioned that this system would be applied to all new faculty inducted into the higher

education system, while the existing faculty would be provided the option to be appointed on tenure track.

8. The Twinning Program allows for the formation of collaborative arrangements for promotion of education, research and development among partner institutions inside and outside the country.

9.5 Performance Indicators

- The percentage of faculty members in universities and degree awarding institutions holding a Ph.D. Degree
- Percentage of faculty members who have undergone teacher training courses
- Number of Postgraduate courses taught per department
- Number of Ph.D. students per faculty member at a University
- Total Quantum of funds obtained from competitive research grants
- Number of International Journal Publications
- Number of faculty members presenting at International Conferences

10 Improving Access

10.1 Aim

To maximize opportunities for acquisition of quality higher education for the 17 – 23 year old age group in Pakistan.

10.2 Introduction

Widening access and improving participation in higher education are a crucial part of our mission. Participation in higher education will equip our citizens to operate productively within the global knowledge economy. This will result in social benefits including better health, lower crime, civic responsibility, environmental awareness and a more tolerant and inclusive society. Accordingly, we aim to ensure that all those with the potential to benefit from higher education have the opportunity to do so, regardless of socio-economic background. With an ever-increasing population and increasing demands from the economy, widening and increasing participation is a permanent goal of the higher education sector.

According to the Report of the Steering Committee on Higher Education (2001) the total number of students in Pakistan's higher education system was approximately 475,000, which translated into a higher education enrollment ratio of 2.6% for the age group of 17-23 years. Of these 475,000 students, only 139,000 attended universities- representing a less than 0.8% enrollment ratio for higher education, i.e. fewer than 8 of every 1000 Pakistanis between the ages of 17 and 23 attend university. Pakistan ranked amongst the worst in the world in higher education enrollment ratios, as compared to 10% in India, and 68% in South Korea.

The major causes attributed to the low level of enrollment were: firstly, a corresponding crisis of coverage and access at the primary and secondary levels i.e. the feeding mechanism; and secondly, at the university level, the prohibitive costs of obtaining an education. While regular tuition fees are relatively low, the corresponding costs of living associated with a university education far outstrip the average annual family income.

10.3 Objectives

- To significantly increase enrolment in undergraduate and postgraduate degree programmes at universities
- To provide opportunities for higher education to talented students regardless of need or socio-economic background
- To support the delivery of quality distance education
- The introduction of new areas of teaching and research in universities in response to market demands and projection of future needs of Pakistan
- To ensure that institutions are equipped with the necessary infrastructure to absorb an increased student population:
- Provide on campus residential opportunities to students so that deserving students are not deprived access to quality higher education
- Facilitate the private sector in provision of quality higher education

10.4 Major Programmes

Increased participation is not simply a matter of providing more places. The sector must work hard to increase the demand for higher education by instilling the values of tertiary education and raising student aspirations, to stimulate progression from schools and colleges to universities.

We are making plans to increase the supply of places to keep up with increased demand. In addition, we are working with the sector to develop innovative approaches to provide suitable learning experiences for the students of the 21st century, while taking into account the willingness and capacity of institutions to expand. This is a complex task which requires bringing into balance student demand, capacity in the sector and employers' needs.

The following major initiatives have been addressed to tackle tertiary enrolment ratios:

1. The Government has a limited pool of resources and can not shoulder the burden of provision of higher education by itself. The private sector both inside and outside the country must rise to meet the challenge of provision of quality higher education to a population of 150 million people. The private sector is to be incentivized and encouraged to open quality institutions in disciplines relevant to the socio-economic development of the country.
2. Increasing access to 5% over the next 5 years and 10% over the next 10 years will require optimum utilization of existing resources, physical

infrastructure development, as well as technological infrastructure development so that modern approaches including distance education methodologies can play their proper role

3. Advances in information and communication technologies provide great opportunities to enhance learning in higher education by both on-campus and distance education. Through the open and virtual university, as well as distance learning initiatives, mechanisms are in place to widen the scope of delivery of higher education
4. The HEC is initiating programmes to address issues regarding the escalation of tuition fees and other educational related expenses, which create a financial barrier to students from low-income families in accessing higher education. These financial constraints are being ameliorated through programmes such as the Needs-Based scholarship programme, a collaborative programme with the United States Agency for International Development (USAID), which provides financial assistance to students who secure admission in selected prestigious institutions in Pakistan. The HEC is continuing to work with other international donor agencies as well as fund provisioning from the Government of Pakistan.
5. Many of the world's most prestigious institutions are opening their campuses in the Middle East, Far East and Europe in response to the global geographic scenario, and to accommodate an increasing number of prospective students from this part of the world. The HEC aims to seize this opportunity by attracting reputed universities to

establish campuses in Pakistan. As a start, the HEC is encouraging such universities to develop external degree programmes in Pakistan.

6. Coupled with increased access come increasing demands on institutions with regard to physical and technological infrastructure. University-Mega Projects are being initiated, which encompass all of the development activities of institutions according to their projected future requirements.
7. In order to achieve significant enhancement of students in Colleges and Universities it is crucial for the Private Sector to play a leading role. Special incentive packages will be devised to facilitate the Private Sector to open new Institutions and enhance existing operations. They will also be facilitated and encouraged to donate to the public sector universities and open new departments and centers there.

10.5 Performance Indicators

- Number of Students at different levels of study broken up by discipline
- %age of students on scholarships at different levels of study
- Number of students enrolled in distance education programmes
- Number of new seats available each year in different programmes of study and at different levels
- Percentage of students living on-campus
- Quantum of funds invested by private sector in Higher Education

11 Promoting Excellence in Learning and Research

11.1 Aim

To ensure that all higher education students benefit from a high-quality learning experience fully meeting their needs and the needs of society, as well as increase the capacity of higher education institutions to carry out cutting-edge research in all areas of Science and Engineering as well as Humanities, Social Sciences, Economics and Finance.

11.2 Introduction

Learning, teaching and research are at the heart of higher education. They are a core activity for all higher education institutions, and feature strongly in public perceptions of the sector's role and achievements. The HEC aims to drive up quality in learning and teaching, and action to support, promote and reward excellent practice and to inform student choice. We aim to improve the status and recognition of excellent teaching and learning as a key element in the mission of higher education, alongside research. Institutions face the challenge and the opportunity to develop innovative approaches to learning that meet the changing needs of learners and society.

Our plans recognize the changing environment in which teaching and learning in higher education take place. Students will learn in a wider range of settings, and the advent of new technology offers up new ways of teaching and supporting them. With initiatives to increase access, the student body is changing, with more part-time and mature students and people from diverse socio-economic backgrounds. In the modern world, people increasingly need

skills of evaluating and managing information, in both their personal and working lives. Curriculum design and pedagogy within higher education must support and develop these skills and encourage students to take responsibility for their own learning. We need to recognize the strong links between teaching and research across the sector, with research informing the design and content of the future higher education curriculum and providing insights into new approaches to learning and teaching, particularly in innovative modes such as e-learning.

Research is essential to the acquisition of new knowledge and to fostering understanding. A dynamic, world-class research sector is not only vital for the health of universities but crucial to economic growth and social cohesion. Enabling and nurturing truly excellent research remains the cornerstone of our research policy. We recognize that this can only be achieved in a research base that is properly funded, where there is critical mass, and with valued and well motivated researchers.

Researchers working at the leading edge of their subject in institutions are part of a much wider research community. They conduct their research, and make their careers, in the context of a number of external factors: the evolution of research agendas and themes; competition from research groups and other modes of research and development across the world; and the evolving interface between research, practice, business and the community. We need to recognize researchers whose work supports public sector professions, the cultural industries and civic society, alongside those whose work has brought economic benefit or expanded the frontiers of knowledge.

Establishing the competitiveness of the research base in a global context implies that we must recognize and support truly excellent research financially, and foster effective collaboration. A dramatic increase in the research activities in institutions and the establishment of a 'research culture' will be required to achieve our objectives.

A key feature of a world-class research system is its dynamism – its openness and ability to change. We wish to enable researchers to respond to new trends and developments in their disciplines and in the research environment, and to pursue new fields of enquiry. Our funding arrangements will nurture and respond to these challenges as well as recognising established excellence.

11.3 Objectives

- To develop a research sector that is dynamic, and has the capacity to respond flexibly to a changing research environment.
- To work with the sector to develop a system for assessing research that enhances the power of the national research base and assists institutions in identifying and fostering excellence.
- To achieve the successful implementation of the new quality assurance framework for higher education.
- To promote activities to enhance the quality of learning and teaching across the sector.

- To provide rewards to celebrate and encourage excellence in all modes, pedagogies and approaches to teaching, and to promote the professional development of teaching staff.
- To support the continuing development of the physical infrastructure for learning and teaching, so that this remains fully fit for purpose and delivers excellent provision.
- To support the supply of higher education student places matching the changing needs of learners and other stakeholders.
- To review and put in place funding methods for learning and teaching that will support the achievement of these objectives.
- To implement a funding policy that:
 - Supports and rewards world-class research, encourages effective collaboration, and provides capacity for developing and extending research capability in new areas of work
 - Fully reflects both the economic and social benefits of research
 - Is responsive to changes in the research environment and in the demands made on researchers
 - Enhances skill levels and working conditions for researchers and research students
- To generate and encourage external research funding and income
- Post-graduate Student enrollment enhancement

- Intellectual Property commercialization and exploitation
- Focus Area Development:
 - Technology Programmes to support industrial growth and enhanced quality of life.
 - Strengthen academic and research programmes with direct relevance to the economy such as Engineering and Information Technology, Pharmaceuticals, Agriculture and Veterinary Sciences
 - Support Basic sciences in key Institutions to build the base for future research
 - Support advanced cutting edge technologies having potential to build the future knowledge economy such as Biotechnology and Nanotechnology
- Assist social sciences, humanities, economics and business studies

11.4 Major Programmes

1. The HEC has launched research grant program under which creative researchers of the country working in various fields of Science and Technology as well as Social Sciences are awarded research grants to enable them to conduct R&D in priorities areas of science and technology and social sciences. The normal limit of the grant is Rs.2

million over a period of 3 years. Meritorious scientists can apply for grants of upto Rs.6 million.

2. A major focus of the Research Grant Program is to strengthen laboratory facilities to ensure the continuity of research beyond the funding period.
3. The HEC is implementing the system of university overheads, whereby 10% of research funds made available to institutions will go to the universities to cater for the implementation of modern financial management practices as well as general institutional strengthening. In turn, the HEC will require institutions to develop capabilities to efficiently manage research grants, and develop an office of research. The office of research would be a central resource facility available to all university faculty to assist them with the development of research projects, negotiate research contracts and enhance the ability of the faculty to attract research and development grants.
4. Faculty Development programmes will be complemented by improved modes of delivery of teaching, to enhance the learning environment for students.
5. Library Support and development programs to ensure digital library facilities are available at each library as well as physical books and journals.
6. Library information management system support programme aim to improve the efficiency of university libraries. The HEC is introducing

initiatives to digitize university library catalogues, facilitating the search through nation-wide collections and inter-library loans.

7. Sabbatical leave fellowship programmes are intended to encourage faculty members to avail sabbatical leave for undertaking research or other intellectual activities which are otherwise not routinely possible. The HEC has already launched a fellowship programme with financial incentives and provision of research grants during the sabbatical leave period.
8. The HEC has initiated numerous schemes for the strengthening and development of S&T labs and libraries. State of the Art technology and the latest books and journals will be available to universities students/researchers as a result of execution of these schemes.
9. Hi-technology centralized Resource Laboratories are being established in selected universities across the country. Implementation of this project aims to place costly Hi-tech laboratory equipment at centralized laboratories at each university so that all the faculty/researchers of concerned departments may have access to this sophisticated equipment for Research activities.
10. Notwithstanding the provision of connectivity and literature access, the need for physical equipment to support research and teaching in the scientific disciplines is a reality. The Higher Education Commission is thus proposing to establish central research laboratories at the premier research universities in Pakistan. These facilities would be centralized and have essential equipment required by researchers in a variety of

disciplines. Support to these laboratories would be provided by a dedicated staff of engineers, fully trained in the proper utilization of the respective instruments

11. HEC efforts for promotion of research at universities have greatly enhanced the number of national and international research grant recipients and increased the number of publications in reputed international journals. The HEC aims to further stimulate research by instituting annual awards for the best research publications in various disciplines.
12. IT Infrastructure strengthening both at the intra-university as well as inter-university level will facilitate enhanced scholarly communication, as well as facilitating the delivery of scientific information and distance education.
13. Predominantly, the post-graduate programmes of universities in Pakistan are essentially research-based; this generalization is more true for doctoral studies requirements. This research based system is more effective in those countries which have very strong broad-based academic programmes for bachelor and masters degrees. However, even in those countries, post-graduate students are required to demonstrate their independent research skills by submitting a literature review based thesis in their first year. Therefore there is a need that our postgraduate students should undergo at least two semesters of course-work focusing not only on their chosen field, but also giving

them working knowledge of other allied disciplines relevant to the field of concentration.

14. Another avenue that the HEC is providing to Pakistani faculty is to provide seed-money for short visits to foreign institutions for doing some joint research and to develop collaborative research proposals. An important component of this programme is to facilitate visits of foreign collaborating scientists to their Pakistani counterpart laboratories/institutions for hands-on training of post-graduate students and researchers.
15. The HEC aims to enhance the research capacity of local institutions by providing opportunities for faculty members to pursue Ph.D.-level education, through foreign and indigenous Ph.D. programmes.
16. Diversification of the degree programs offered at universities, particularly in the introduction of quality undergraduate programs is essential to ensure that graduates are well-quipped for the demands of employers. The transition of existing programs to 4-Year undergraduate programs will facilitate the delivery of a broad-based educational curriculum, aimed at producing well-rounded graduates.

11.5 Performance Indicators

- The number of people involved with R&D in Science & Engineering in Institutions of higher learning
- The annual rate of production of Ph.D.s

- Percentage of Universities/Degree-Awarding Institutes conducting Ph.D. programmes
- Quantity of international research publications of faculty members
- Number of external research grants won by institutions from non-government sources
- Percentage of faculty undergoing teacher training courses
- Number of patents awarded to University faculty and students
- Annual income of Universities from Commercialization of research
- International Internet Bandwidth available per university
- Computer / Student Ratio
- Computer / Faculty Ratio
- Number of International Journals subscribed to per Institution
- Number of International/Local Conferences Organized per Institution
- Number of local Journals published to International Standards

12 Ensuring Relevance to the Economy: Industrial Linkages

12.1 Aim

To promote interaction between the industrial and higher education sectors, to ensure alignment of the generation of human capital with economic activity and national development objectives.

12.2 Introduction

Industrial sector development lies at the heart of the economic revival of Pakistan. The Higher Education Commission is therefore supporting initiatives aimed at enhancing collaboration between academia and industry, with a particular focus towards the development of locally relevant education and research programs at the academic institutions. Universities the world over serve as local resource centres providing training and support to industries along with trained manpower. When combined with the spirit of entrepreneurship, these academic institutions can change the economic destiny of entire regions, as well as the country.

For the promotion of linkage between Academia and Industry it is necessary to enhance the quality and level of research being conducted at the higher education institutions. Research, however does not occur in a vacuum, and there are numerous factors that need to exist for research activities to take root and prosper. This research must also be relevant to local industrial and social needs, leverage the regional and local competitive advantage, and be goal-oriented.

As a developing nation with limited resources Pakistan must focus on areas with direct relevance to the socio-economic development of Pakistan. It is also essential to develop a culture of innovation where graduates focus on job creation, as opposed to the traditional strategy of employment in the public sector. University – Industry linkage enhancement is essential to ensure relevance of teaching as well as research and programmes in academic institutions.

12.3 Objectives

- To encourage university-industry collaboration for technological innovation and indigenization
- Industrial Internship programmes
- Technology parks need to be set up next to the academic institutions or vice versa, so that a fully serviced environment is provided to scientists and engineers.
- Involvement of industry experts in university bodies such as the Senate, Curriculum advisory boards, etc.

12.4 Major Programmes

1. Efforts are being made here to establish a technology triangle of universities, industries and Research and Development Organizations which is internationally recognized as an effective mechanism to accrue benefits of advancements in Science and Technology. Universities should significantly enhance activities for development of Intellectual Property and its subsequent commercialization. They

should focus on enhanced ties with local industry through provision of training, testing, research support and consultancies. The spirit of entrepreneurship should be developed in all students with a view to significantly increase the number of high-tech startups in the country.

2. As a first step, a modest University-Industry Technology Support Program has been launched which will provide research grants of up to Rs.6 million to undertake collaborative research ventures.
3. The partnership with industry and other sectors of society can also help to vocationalise higher education. Internships in industry are to become routine, and the engagement of business managers in higher education decision-making will be promoted. In addition, joint research projects will bring universities and businesses closer together providing assistance in job seeking.
4. Some knowledge transfer processes depend heavily on cutting-edge research resources, such as the exploitation of new intellectual property through licensing and the formation of spin-out companies. In principle the dissemination and application of research findings should be part of the process of research at the highest level. Institutions receiving grants for research will be encouraged to undertake these activities.
5. Universities will be required to establish a career centre, encouraging students to gain practical work experience during their education. The career centre will also require universities to establish links with

various industries for employment opportunities for their graduating classes.

6. University – Industry collaborative programs involving a minimum of 20% matching contribution from Industry will be supported.
7. To facilitate interaction between Academia and Industry the Universities will be encouraged to have a “one window” operation for providing support to Industry. This will involve the set up of an “Office of Research” at each university which will be responsible for negotiating contracts, commercializing research, providing progress reports to Industry and taking care of all issues relating to the execution of the project at the respective Institution.
8. Research and Development Centers in Frontier Technology areas of Engineering Design, Biotechnology, Nanotechnology, Pharmaceuticals, etc. will be established with the collaboration of Industry.
9. The HEC will be reviewing and identifying certain centers in public sector universities/degree awarding institutes as ‘National Centers’. This initiative requires the identification of priority areas with relevance to fast-track socio-economic development, and identification of centres of established excellence in which the ‘National Centres’ may be established. These Centres would serve as focal points and would receive special funding in their pursuit of excellence

10. In order to commercialize the research being conducted in the various universities, research labs, institutes and research centres in Pakistan, the HEC has launched the National Technology Incubator (NTI) Project. The establishment of Technology Incubation Parks in Universities will facilitate the acceleration of technology commercialization in the country and encourage entrepreneurship among the newly emerging class of technology graduates.

12.5 Performance Indicators

- Number of joint university-industry projects
- Number of Technology Incubators established
- Number of patents issued to university faculty and students
- Total yearly income of university from commercialization of research
- Number of industry sponsored research projects at university
- Percentage of university students undergoing internship with industry.

13 Developing Leadership, Governance and Management

13.1 Aim

To provide support, through a broad-based partnership, to enhance further the sector's leadership, governance and management.

13.2 Introduction

To improve the quality of education and research at universities an improvement is required in their management and operation. The Higher Education Commission will assist these institutions in identifying areas requiring reform, identifying best practices, and suggesting mechanisms for improvement. In this regards the HEC is proposing to implement the system of university overhead, whereby 15% of research funds made available to an institutions will go to the universities to cater for the implementation of modern financial management practices, as well as, general institutional strengthening. In turn, the HEC will require institutions to develop capabilities to efficiently manage research grants, and develop an office of research. The office of research would be a central resource facility available to all university faculty to assist them with the development of research projects, negotiate research contracts and enhance the ability of the faculty to attract research and development grants.

The function of the universities is to produce quality graduates required by industry. The university as a whole and each department in turn must work to identify the profile of their respective graduates. This profile must be built in consultation with the potential employers to ensure employability of

graduates. Solid English verbal and written communication skills and computer skills are the demands of the times and it is the responsibility of the universities to implement programs to ensure these qualities in their graduates.

13.3 Objectives

- To develop a core of university administrators well-versed in modern educational development skills
- To train young faculty in educational administration and management skills
- To assist universities in promoting a 'continued education system' for their faculty and administrators
- To arrange refresher courses and hands-on workshops on governance and management of educational institutions
- To inculcate 'work and professional ethics' of higher education institutions of developed countries in our universities
- To upgrade capabilities of the Universities to formulate and implement projects aligned with their respective visions
- To develop 'performance-based award and promotion system' in all cadres of university workforce
- To develop a new accountability relationship with the sector based on increasing stakeholder confidence

- To promote a more sustainable approach to rewarding and developing staff who work in higher education
- To establish Research Management Cells at universities to:
 - Manage research
 - Apply for International grants
 - Commercialize Research
 - Participate in National and International Research Activities
 - Managing Inter-disciplinary research
- To help institutions develop a more demonstrably fair and supportive environment for their staff

13.4 Major Programmes

- Training of young faculty at various universities on teaching, research and administrative skills (3 months in duration for each training event)
- Management courses designed for educational institutions by professional organisations, such as PIM and NIPA (year-round activity)
- Management and Support Staff development and training

13.5 Performance Indicators

- Number of University Administrators undergoing training courses
- Number of universities adopting the Tenure Track System of appointments.

- Number of Institutions using the Financial Management System.
- Number of universities having ISO 9000 certification
- Percentage of projects rated as “Good” by HEC Monitoring Teams for projects being undertaken by the Universities

14 Enhancing Quality: Quality Assessment and Accreditation

14.1 Aim

To establish and implement stringent quality criteria developed against international standards to assess the performance on both the programme and institutional level.

14.2 Introduction

Quality refers to the attainment of standards of resourcing and provision in the higher education sector, and the achievements or outputs of an institution or system. Quality is a multidimensional concept, and it is not possible to arrive at one set of global quality standards against which local institutions can be assessed. Quality embraces all the major functions of higher education: teaching and academic programmes, research and scholarship, staffing, students, infrastructure and the academic environment. The concept of accountability is closely allied with quality- no system of higher education can fulfill its mission unless it demands the highest quality of itself. Continuous and permanent assessment is necessary to reach this objective. Simultaneously, it is to be ensured that great care is exercised when making quality assessments, as it involves matters of judgment, academic values and cultural understanding.

The issue of quality cannot be dissociated from the quest for excellence and the need to establish evaluation criteria. In order to assess local institutions with a global perspective, reviewing institutions against international quality benchmarks has gained precedence. Such criteria must however be adapted

to take into account the diversity of situations, and the academic culture in Pakistan. The need to develop a culture of evaluation is inseparable from the concept of quality, itself intimately bound up with the successful democratization of the higher education system.

Standard quality assessment practice involves the comparison between observed and intended outcomes of (programmes and institutions) and continuous analysis of the sources of dysfunction. Both internal self evaluation and external review are vital components of any well-developed quality assurance system.

The key factors influencing the quality of higher education is the quality of faculty, curriculum standards, technological infrastructure available, research environment, accreditation regime and the administrative policies and procedures implemented in institutions of higher learning. It is absolutely critical to monitor and regulate growth of sub-standard institutions of higher learning. A comprehensive multi-level mechanism of accreditation is to be developed to ensure provision of quality education. Accreditation needs to occur at the department or program level, as well as the Institutional level.

The quality of higher education imparted in the various institutions in Pakistan and the quality and relevance of research conducted there can not be improved without the availability of quality faculty. The percentage of faculty having Ph.D.s and equivalent level in Universities and Degree Awarding Institutions is alarming low standing currently at less than 25%, and special focus will have to be placed to impact this critical indicator of quality. It will also be necessary to promote and develop a culture of generation of

knowledge at universities since the retention of quality faculty is linked to the availability of a conducive research environment.

14.3 Objectives

- To enhance the capacity of the Higher Education Commission to carry out activities outlined in its charter
- To ensure that education imparted at domestic institutions meet certain basic quality criteria, developed against international standards
- To renew and revise curricula against advances in subjects
- To introduce innovative approaches, such as international collaboration and twinning arrangements
- To establish mechanisms for evaluating the quality of higher education institutions
- To introduce quality assurance methods at both institutional and systemic levels
- To inform the public on the quality and validity of institutions and academic programmes based on uniform evaluation criteria
- Capacity building at each university for continuing quality assurance

14.4 Programmes

The HEC is initiating major programmes to fulfill its key function of monitoring the performance of educational institutions:

1. Extensive statistics are being collected on all aspects of institutions to gain a comprehensive picture of the state of higher education in the universities of Pakistan. This information will be used in formulating various constructive activities which are under process with HEC, as well as being utilized for the development of a set of institutional ranking criteria. The data received from the universities will be used in the systematic implementation of all these programmes.
2. The 'Quality Assurance Mechanism' involves the development and formulation of assessment criteria to ensure quality at the departmental level in universities as well as the university level itself. The HEC will work with professional societies and stakeholders in the establishment of these criteria.
3. The HEC is conducting continuous revision of curricula in collaboration with universities and representatives from industry, to: bring uniformity & standardization of curricula taught in the universities and affiliated colleges of Pakistan; revise & update the existing curriculum to bring it in line with National requirements; adjust needs of Industry to make education purposeful & job oriented; introduce innovations and to ensure quality of education and incorporate the changes and global trends in the curricula emerging as a result of research carried out in the field.
4. The HEC will also exercise its authority to take measures against institutions that overstep the legal bounds defined by the Charter under which they are initially established. A Steering Committee consisting of

the Executive Director, HEC as well as respective provincial education secretaries will coordinate the activities in the arena of quality assurance, and ensure consistency of policies across Pakistan.

Steps will also be taken by the HEC to ensure that all universities and degree granting institutions in Pakistan satisfy the criteria for the Establishment of a University/Degree-Awarding Institute laid by the Federal Cabinet in Feb. 2002. As a consequence of this all institutions who were in existence at that time have been given a deadline of 5 years to satisfy the minimum criteria, or face closure. New institutions will only be granted a charter upon satisfactory compliance of these criteria.

6. Universities in Pakistan are to undergo ISO 9000 Certification Program, for review and assessment of quality standards. This program is concerned with "quality management" and is to be reviewed by the Board of Governors and Administration.
7. The move towards Four Year Bachelor's Degree Program will allow the delivery of a broad-based education, generating well rounded and flexible graduates who are able to meet the rapidly evolving demands of the workplace.
8. Continuous curriculum development must align the delivery of education with the requirements of employers and rapid progress in academic disciplines. Higher education curricula are to provide insights into new approaches to learning and teaching, and adapting to disciplinary developments. The HEC will continue curriculum design

and development through stakeholder consultation in all academic areas.

9. The HEC is continuing to maintain a comprehensive website to inform the public on approved and unrecognised institutions of higher education operating in Pakistan. Measures will also be taken to inform the public of the legitimacy of institutions and professional degree programs through nationwide press announcements.
10. The Higher Education Commission is in the process of establishing an Accreditation Council, which will be responsible for the accreditation of degree programs in a broad range of disciplines. The HEC will also continue to work with existing professional bodies to support existing accreditation activities.
11. After an extensive review of international ranking procedures, the Quality Assurance Committee of the HEC has devised a mechanism for the ranking of local universities. This ranking will measure all universities public and private, against certain basic criteria, and will allow the public to make informed decisions for enrollment into the best institutions in Pakistan.

14.5 Performance Indicators

- Number of Universities with quality assessment cells
- Number of universities having ISO 9000 or similar certification
- Mechanism for rating of departments

- Mechanism for rating of universities
- Number of disciplines for which Accreditation Councils have been established
- Number of departments accredited in Universities
- Number of Courses whose curricula is revised during the past 3 years

15 Physical and Technological Infrastructure Development

15.1 Aim

To upgrade and equip universities in Pakistan with the required physical and technological infrastructure to support the conduct of high-quality education and research.

15.2 Introduction

In the pursuit of institutional excellence in teaching and research, additional investments have been required to upgrade the physical infrastructure of universities to cater for the demands of an increasingly large sector. Cognizant of the fact that traditional brick-and-mortar solutions to improving quality and access will only have an impact to a limited degree; the need of the hour is to utilize the multiplier effect of distance education to provide education to the masses.

The terms "information society" and "knowledge-based economy" are used to describe contemporary economic society. In our global, networked economy and society, information is an essential resource for capacity-building and social and economic development. This new global knowledge-based society requires embracing new development challenges and opportunities that the recent rapid evolution in information and communication technologies (ICT) has brought about. This phenomenon has greatly enhanced human capacity in acquiring and sharing information and knowledge.

The HEC has developed a comprehensive ICT strategy as an integral part of the broad development strategy, so that ICT can be effectively utilised to address fundamental development challenges of poverty reduction and sustainable economic development.

Decades of under-investment in the Higher Education system have left the physical infrastructure of universities unable to meet the demands of an ever-increasing demographic. Strategies for increasing enrollment in higher education, improving research capacity, and improving quality of education programmes all require that the necessary infrastructure exists to ensure the success of intervention strategies.

The role of knowledge in growth is no longer disputed. This suggests an important place for information and communications in development, which global evidence on the positive impact of access to ICTs on poverty also supports. The Higher Education Commission is determined to meet the challenges offered by the Information Age, to recognise and exploit the opportunities created in the new knowledge-society, so that ICTs can be utilized in Pakistan as a potential force for capacity building and ultimately economic development.

The numerous efforts of the reform process to revitalize institutions into world-class seats of learning and research have injected an influx of scholars into institutions through various programmes. The increased research activity must be complemented by the provision of high quality services and infrastructure.

15.3 Objectives

15.3.1 Estate Strategy Objectives

- To upgrade the physical infrastructure of existing campuses
- Campus Infrastructure Development
 - Electric/Water supply, roads, facilities, sports etc.
 - New buildings for teaching and research
 - New departments
 - Student Housing
 - Faculty Housing
 - International Visitor Housing
- Set up of new campuses in relevant locations
- Set up of new universities in the Private and Public Sector

15.3.2 Information Strategy Objectives

- IT Infrastructure development inside Institutions as well as linkages of Institutions to each other and to the International Teaching/Research community
- Research related services
- Teaching Related Services acquisition for provision of quality education leveraged on technology

- Library Infrastructure development

15.4 Programmes

1. The Higher Education Commission is proposing to establish central research laboratories at the premier research universities in Pakistan. These facilities would be centralized and have essential equipment required by researchers in a variety of disciplines. Support to these laboratories would be provided by a dedicated staff of engineers, fully trained in the proper utilization of the respective instruments.
2. The HEC is working with the Planning and Finance divisions of the Government of Pakistan to ensure that the recurring and development needs of the various public sector universities are provided for. The development expenditure of the universities is now allocated on performance and need, where the need is defined both in terms of the particular requirements of that institution as well as the need for improvement in the higher education sector at a macro level.
3. Universities are encouraged to submit development projects that are relevant to their institutional needs. These projects are reviewed by the appropriate authority (DDWP, CDWP or ECNEC- dependant on project expenditure), and funds are released accordingly.
4. Universities are now encouraged to submit 'University Mega-Projects', which contain all of the development activities the universities envisage to complete over a period of five to seven years. These Mega-Projects are designed according to individual institutional visions and objectives, and are placed for review at the ECNEC level.

5. The Pakistan Education and Research Network (PERN) is a reality, connecting 56 universities, and when fully deployed will connect all of the public and private sector universities of Pakistan to each other. This network provides the ideal platform to build an "internet compatible" truly high-speed network that will allow real-time transfer of audio and video, multimedia-enabled lectures, remote research partnerships, and many other applications hitherto unknown.
6. The terrestrial computer network of PERN is complemented by several digital television channels dedicated for education in the new Pakistan satellite that is expected to be operational by the end of the year. This combination of video over dedicated satellite channels and data/audio/multimedia over the Pakistan Education and Research Network will provide a world-class distance-learning platform.
7. The University Computerization and Networking Programme of the HEC provides public-sector universities with funds to establish a computerized infrastructure to provide a modern and effective working environment. By installing Local and Wide Area Networking systems (LAN/WAN) the project is furnishes universities with modern communications systems, supporting local intranet, internet, and PERN accessibility.
8. The Digital Library Programme aims to empower the academic community with the requisite technology information resources, and training to develop human capacity to manage the transition to the information culture. The programme provides access to high-quality

peer-reviewed international scientific information (academic journals and scholarly publications) via online delivery. By engaging the research community in an extensive consultation process, development objectives drive the content of the library.

15.5 Performance Indicators

- Number of new students enrolled in Universities and Degree Awarding Institutes
- Faculty / Computer ratio
- Student / Computer Ratio
- Total Internet Bandwidth available per Institution
- Number of Library Journals available online per Institution
- Degree of computer networking inside Institutions
- Degree of deployment of Student Information Systems in Institutions

16 Physical Targets

This section summarizes the physical targets to be achieved following the implementation of the proposed 5-year plan:

16.1 Faculty Development

- The percentage of faculty members in Universities and Degree Awarding Institutions having Ph.D. degree is to be increased to 40% in 5 years, and thereafter a 10% per annum increase in percentage should occur yearly.
- 100% of the faculty should have undergone 1 – 3 month training courses emphasizing pedagogical skills, communications skills and information technology usage skills

16.2 Improving Access

- Enhance enrollment in Universities and Degree Awarding Institutions to 500,000 in five years, excluding distance education programs
- Enhance enrollment to 1,000,000 students in distance education programs
- Ensure that any student obtaining admission on merit is able to obtain higher education regardless of his/her financial condition

16.3 Promoting Excellence in Learning and Research

The target for research related activities in 5 years is to:

- Increase the total number of people in Pakistan involved with Research and Development in Science and Engineering from the current level of 69 people / million to 300 people/ million.
- Increase production of Indigenous Ph.D.s inside the country to 1,500 per year.
- Introduce Ph.D. programs in at least 50% of the departments in Universities and Degree Awarding Institutions.
- Have a 40% per annum growth in the number of International publications of faculty members.
- Have a 25% per annum growth in External Research grants won by Institutions from sources other than Government sources

16.4 Ensuring Relevance to the Economy: Industrial Linkage

- Establish 10 Technology Incubation Parks
- Enhance patent applications from Engineering Universities to at least 20 per year per Institution
- Enhance the number of joint University-Industry projects being undertaken at Universities to at least 5 per Institution
- Entrepreneurship courses to be included in all Engineering programs as well as Science and Technology advanced programs

16.5 Developing Leadership, Governance and Management

- Implement a computerized PIFRA compatible Financial Management System in all Public Sector Institutions
- Implement a system for online financial reporting for all development and recurrent funds available to the Higher Education Commission
- System of appointment of Vice Chancellors as envisioned in the Federal Universities Ordinance to be implemented in all Public Sector Institutions
- Training of 30% of top University Administrative Staff

16.6 Enhancing Quality- Quality Assessment and Accreditation

- Establish Quality Enhancement Cells in every Institution
- Ensure ISO 9000 certification at all Public Sector Institutions
- Establish Accreditation Councils in all Professional Disciplines
- Establish mechanism for yearly ranking of Universities

16.7 Physical and Technological Infrastructure Development

- All universities having at least 34MB Internet Connectivity
- All universities to be connected to the Pakistan Education and Research Network on Fiber
- Each faculty member at Universities to have access to computers

- Digital library access for all public and private sector institutions-
journal access to meet research requirements
- Physical Infrastructure enhancement to meet Access targets