



Zarsher Khan
Dy. Director (R&D)

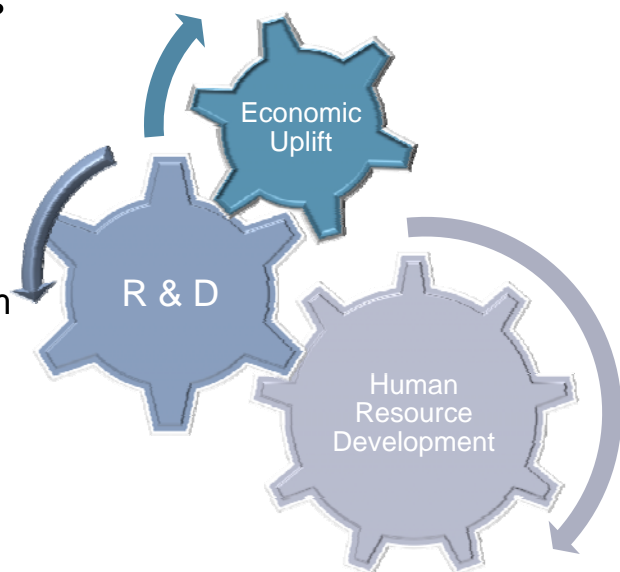
Higher Education Commission
Pakistan

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Higher Education and R&D



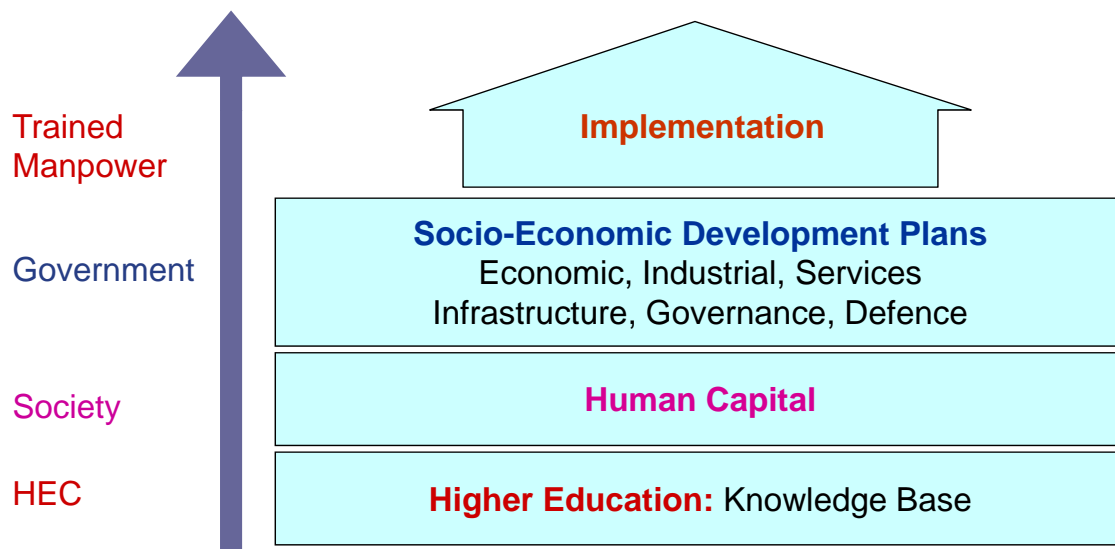
- Research is essential to the acquisition of new knowledge and a dynamic, world-class R&D sector is not only vital for the nation's academic health but crucial to economic and social cohesion.
- The higher Education Commission clearly recognizes this imperative and has placed research and development as a strategic core aim for the improvement of higher education and technological advancement in Pakistan
- HEC aims to develop such Higher Education System that provides world class research, capable of competing internationally.



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National Growth



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Current Status

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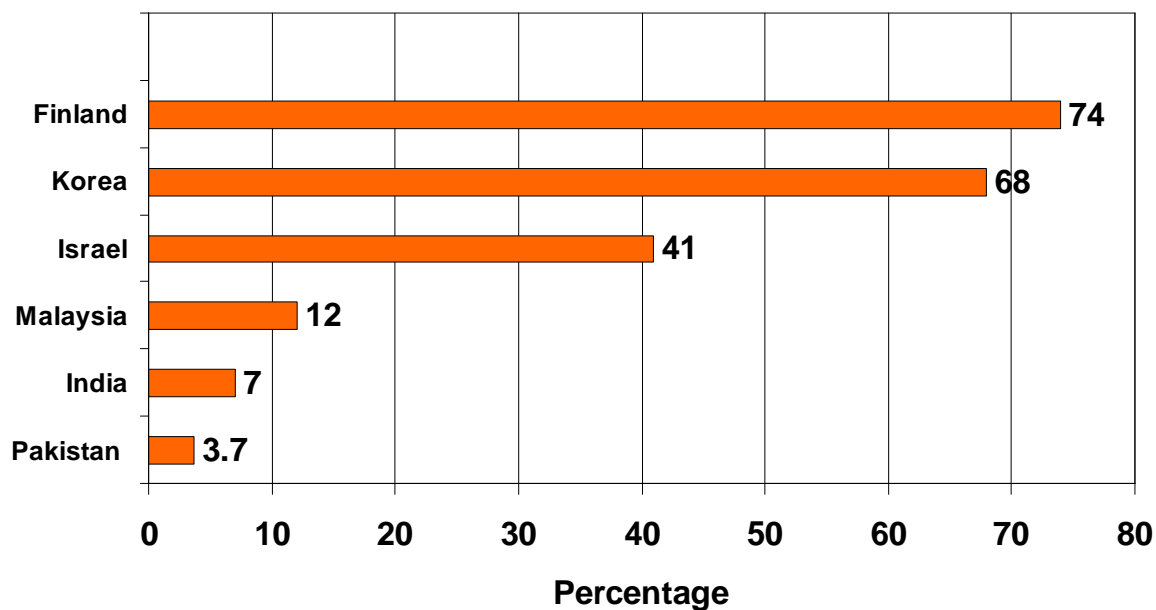
The Demographic Challenge



Year	Population (Millions)	Age group 17-23 years	Percentage			
			2.60%	4.00%	6.00%	8.00%
2000	142.16	18.00	0.53	0.72	1.08	1.44
2005	164.80	21.38	0.62	0.86	1.28	1.71
2010	191.05	25.39	0.72	1.02	1.52	2.03
2015	221.48	30.16	0.83	1.21	1.81	2.41
2020	256.76	35.82	0.97	1.43	2.15	2.87

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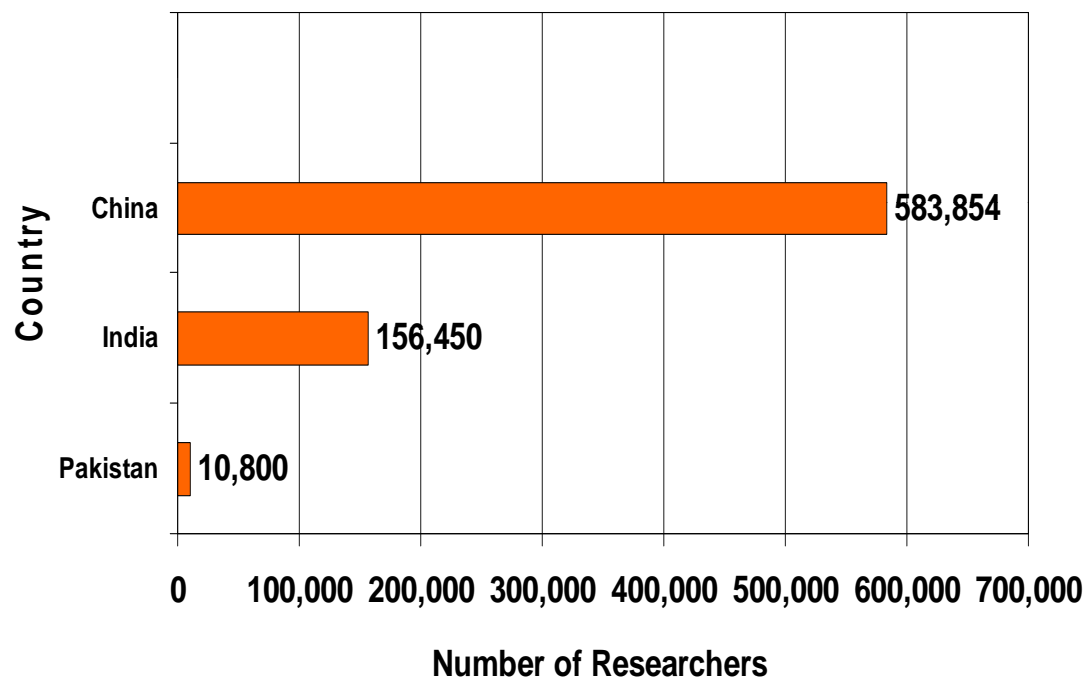
Gross Tertiary Enrolment Ratio In Selected Countries



Pakistan Target 8% ??

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Number of S&E Researchers



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Council of Higher Education, Turkey-Web Site

Overarching Approach



■ Simultaneous Bi-Modal Approach Required

■ Bottom-Up

Basic Health, Primary Education, Water

■ Top-Down

Higher Education

Technology Development

Industrial Linkages

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“To Facilitate Institutions of Higher Learning to serve as an Engine of Socio-Economic Development of Pakistan”

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Functions: Promotion of Research & Development



- Support the development of linkages between
 - Institutions and industry
 - National and international organizations that fund research and development

- Facilitate the introduction of educational programmes that meet the needs of the employment market

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HEC Strategy and Aims

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HEC Strategic Aims



Core	Faculty Development	Improving Access & Learning	Excellence in Research	Relevance to National Priorities
	Infrastructure Development: Physical, Technology			
	Good Governance & Management			
	Quality Assurance: Standards, Assessment, Accreditation			
Support				

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Excellence in Research

To support the technology transfer

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Research Support Programmes



- National Research Program for Universities (NRPU)
- University-Industry Technology Support Program (UITSP)
- Strengthening of Universities and Institutions of Higher Learning in New and Emerging Technologies (Umbrella Project)
- Country Licenses of Advanced Design Soft wares for Teaching and Training in Engineering Institutions.
- Pak-US Joint Academic & Research Support Program
- Travel Grants to Teachers /Scholars
- Organizing Seminars/ Conferences/ Workshops etc.
- Pakistan Organization of Collaborative Research (POCR)
- Training Program for Technical / Scientific Staff and Researchers
- Access to Scientific Instrumentation
- Provision of Grant to Public Sector Universities and Degree Awarding Intuitions For Maintenance of Scientific Equipments.
- BC-HEC Joint Higher Education Links program
- International Linkages of Pakistani Universities with Foreign Universities Project
- Sabbatical Leave Fellowship Program
- Presidential Young Innovator Program
- University Industry Interaction
- Patent
- HEC-CSF Applied Research Support Programme
- HEC Outstanding award series
- Monograph & Textbook Writing Scheme

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- The proposal may be submitted jointly by university and Industry
- P.I. must be from university and Co-P.I must be from industry
- The solution should be industrial based
- There are four domain in which proposal may be submitted:

Improvement in the product

Development of new product

Improvement in the process

Development of new process

- HEC will provide 80% of total budget
- Industry must contribute 20% of the total budget



R & D Scenario in Higher Education



- Very low financial allocation for universities
 - to support research activities,
 - to develop the capacity of faculty and students
 - to develop and maintain research establishments
- Very low research activity in the universities resulting in
 - Lesser output of research publications
 - Lesser presentation of research findings at global forums/conferences
- Non-existence of international academic and research Linkages of Pakistani universities resulting absence of Joint Research initiatives.
- No prioritization of research as per national needs.
- Lack of trained human capital to use state-of-the-art research equipment
- Missing link between academia and industry

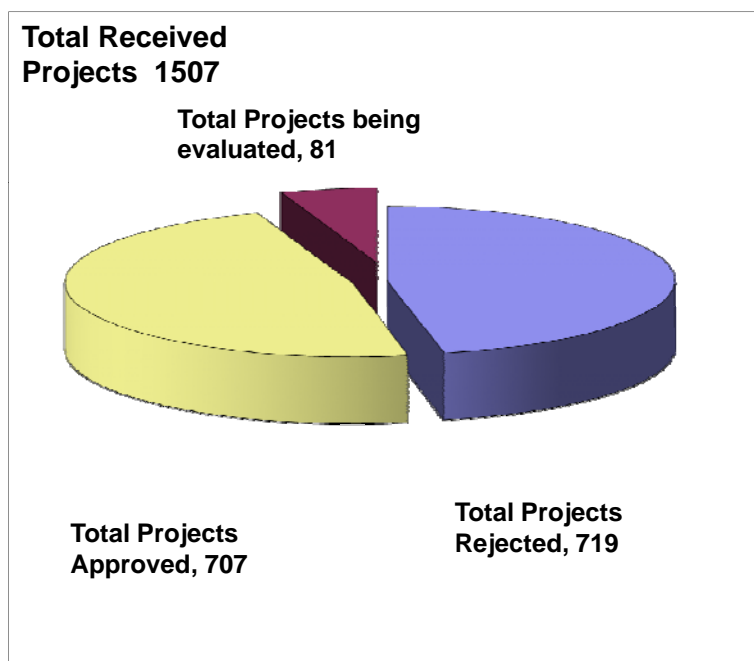


R & D from 2002-2009

1. Research Grants



NRPU Achievements 2003—June 2009



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Success Story

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- Solar Hybrid water heating system for industrial application
NUST and FW Fabrication (Pvt) Ltd.

- Mil-STD-1553 FPGA based remote terminal/Bus monitor
NUST and NEXTEK company
- Oil yielding plant study and its application as a Bio Diesel
QAU and Clean power (Pvt) Ltd

- Prevalence and control of pathological conditions causing skin
damage
university of veterinary and animal sciences and Royal leather

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4. Resource Development

PATENT FILING

- Keeping in view the importance of patent filing HEC has developed a program through which research ideas, published papers, thesis synopsis or whatever is ready to describe potential invention is evaluated for patentability. In case an invention is determined to be patentable the inventor will be encouraged to file for an international patent. To make sure that this process is completely confidential, HEC has developed an online patent filing system. The researchers/ inventors/ scientists can check the progress on the evaluation of their invention/idea as well as the recommendations of the experts to proceed with the filing of international patents.
- Achievements
 - 12 patents have been filed in US Patent Office.

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Products/Technologies ready to commercialize developed by Agricultural Universities of Pakistan



The invention profile of the products	Number of products/technologies
University of Agriculture, Faisalabad	15
NWFP University of Agriculture, Peshawar)	8
Arid Agriculture University, Rawalpindi	6.
University of Veterinary & Animal Sciences, Lahore	5
Sindh Agricultural University, Tandojam	2
Centre for Excellence in Molecular Biology (University of Punjab Lahore)	3
Total	39



Shah Abdul Latif University, Khairpur

Institute
Established in
2004



Date Palm Research Institute



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Challenges for technology transfer

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- Linkages of higher education sector, particularly researchers, with business and industry need to be on high priority.
 - Creation of entrepreneurship culture.
 - System of research management needs to be developed including multidisciplinary access to laboratories and provision of assistance for contract administration, financial management, and legal issues.
 - Research on thematic approach should be encouraged. Six to seven broad subject groups covering the sciences, engineering, technology and medicine; and a larger number of subject groups for the arts, humanities, social sciences and mathematics and statistics. A mechanism will be developed, in consultation with all universities, for a research quality assessment regime that could be operated across the country.
 - The current evaluation/assessment mechanism needs to be improved and should be based as far as possible on quantitative measures.

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To build the confidence between university and industry for collaboration and technology transfer

Establishment of Technology incubation centers in the Universities

Concept of community colleges

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Thank you

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