

## Historical Perspective of Environmental Education and its Objectives in Pakistan

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*Environmental degradation and poverty are mainly attributed to lack of environmental awareness and education. This prompted the government to develop the National Conservation Strategy (1992) and National Environmental Policy (2005). Conservatively, environmental degradation costs Pakistan annually 6% of its GDP or US\$ 6 billion. For implementing this plan, about 20 universities are offering undergraduate, post-graduate and doctoral programs in Environmental Science, Engineering and Education. However, keeping in view the enormous demand, the numbers environmental experts produced are extremely small. As against the minimum requirement of about 13,000 environmental experts to fill the void in the country, the institutions are producing about 300 experts annually. Environmental education will have a domino effect in pursuing and implementing sustainable development, which demands judicious use and conservation of resources, institutional strengthening, integration of environmentally friendly cost-effective country-based technology, as well as priority setting with pro-development and pro-poverty alleviation strategies and continuously striving for excellence for the collective good of Pakistan.*

### INTRODUCTION

**E**NVIRONMENTAL Conservation, alleviation of poverty and sustainable development has been high on the agenda of various global meetings (UN Conference Stockholm, 1972; the Earth Summit in Rio de Janeiro, 1992; New York, 1997 and Johannesburg, 2002). The start of environmental education made historical mark with the start of the International Conference on Human Environment at Stockholm in 1972, on global levels and in Pakistan. Subsequently, the need for environmental education was, for the first time, emphasized in 1979 in Belgrade. The Tbilisi conference in the USSR in 1977 was the first major conference on the theme of Environmental Education where the following objectives were proposed:

1. To create environmental awareness;
2. To disseminate knowledge and skills;
3. To initiate new behavioral approach, at individual/or groups levels, towards environment;
4. To develop inter-disciplinary view of environment as a dynamic system and to emphasis its complexity;
5. To help in promotion of environmentally sound development-program towards sustainable growth;
6. To create an atmosphere of national, international understanding and global cooperation in areas of environmental priority.

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This means that sustainable environmental development should take into account the carrying capacity, the goals of development and balancing of the allowable limits of resource-utilization, keeping in view the needs of the present and future generations. These objectives can be achieved:

Firstly, by bringing about positive attitudinal and behavioral changes in teachers and students, in respect of environmental problems and conservation;

Secondly, by creating awareness about past, current and expected situations of environmental considerations in pursuit of sustainable environment;

Thirdly, by disseminating information and exchanging knowledge and experience gained in achieving the goals of sustainable development;

Fourthly, encouraging and developing critical thinking among students in dealing with real-world environmental challenges, in general, and those of local origin in particular.

Environmental education will act as a springboard to strengthen the knowledge on environment and have domino effect on accomplishing sustainable development in Pakistan (see Fig. 1). It will objectively inculcate positive attitude towards environment, to be seen as pro-development, and will enhance commitment towards basic human rights and find simple pragmatic and appropriate solutions based on scientific global / local knowledge.

### PAKISTAN SPURVIEW

One of the contributing factors to the growing poverty in Pakistan is environmental degradation. The livelihoods of a considerable portion of country's population, especially those living in the rural areas, depend on goods and services provided by natural resources in the rural areas, such as land, water, forests, livestock, fisheries and minerals. Environmental issues, including scarcity of safe drinking-water, water pollution, deforestation, land degradation and loss of biodiversity, resulting in rapid depletion and degradation of these resources, thus having adverse impacts on livelihoods by causing declining yields, reducing employment opportunities and incomes. Environmental degradation caused by pollution of air, water and land is also contributing to poverty, by adversely affecting the health of the poor and hence increasing the burden of disease (Malik 2004).

Another adverse effect of environmental degradation is increased vulnerability to disasters, such as droughts, floods and landslides, and to environment-related conflicts as the majority of the rural poor live in ecologically-fragile areas, while the urban poor often live and work in environments with a high exposure to environmental hazards. The incidence of drought in 2000-2001, for instance, resulted in elimination of livestock worth US\$ 247 million in the first five months of the year in Pakistan. According to 1995 estimates, the cost of air and water pollution and land degradation is US\$ 2.2 billion or about 4 percent of GDP to Pakistan's economy. The current total cost of environmental degradation is considerably higher. According to another conservative estimate, environmental degradation costs Pakistan at least 6 percent of GDP or about Rs. 365 billion (US \$6.05 billion) per year, and all these costs fall disproportionately upon the poor (World Bank, 2006).

The most significant causes of environmental damage burden identified are (i) Illness and premature mortality caused by air pollution amounting to almost 50% of the total damage cost; (ii) Diarrhoeal diseases and typhoid, due to inadequate water supply, sanitation and hygiene contribute about 30% of the total damage cost; and (iii) Reduced agricultural productivity, due to soil degradation, contribution about 20% of the total cost. Rapid degradation of environment in Pakistan and the ensuing poverty can be attributed to a number of key factors, including the utter lack of environmental awareness and education. *The root causes of environmental degradation are poverty, population growth, erratic implementation, symptomatic solutions and lack of long-term priority setting (Farooqi et al. 2008).*

The commencement of environmental awareness in Pakistan took place in early 1990s. Developing the National Conservation Strategy in 1992, initiating educational programmes at university level (Table-1) and formulating National Environmental Policy in 2005 are a few examples; however, implementing these initiatives remains a challenge.

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## SUSTAINABLE DEVELOPMENT IN PAKISTAN

Increased awareness for judicious use and conservation of resources, institutional strengthening, integration of environmental friendly cost effective country based technology, priority setting on mega issues, with pro development and pro poverty alleviation strategies and continuously striving in excellence for collective good of Pakistan

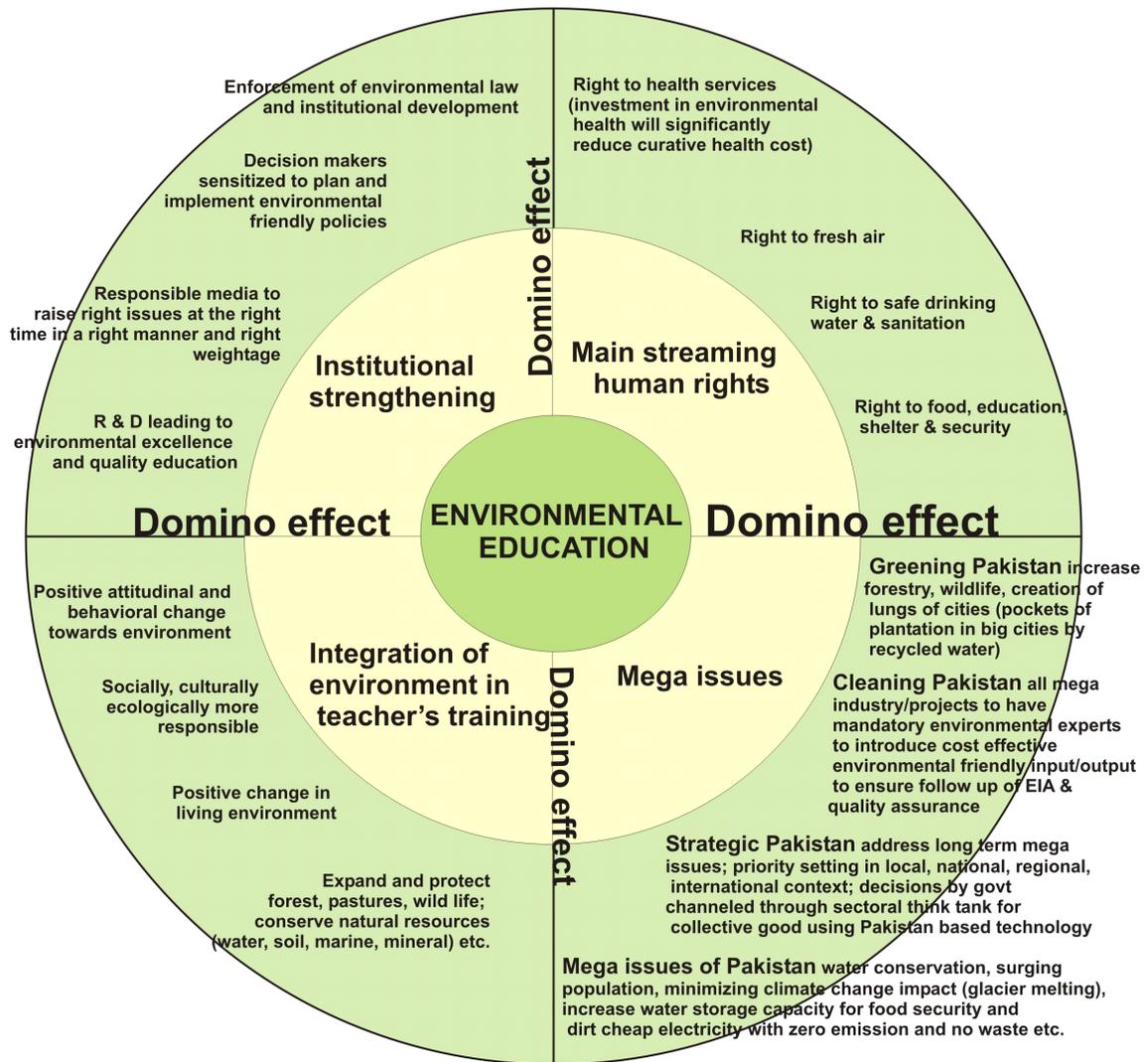


Fig.1. Domino effect of environmental education on sustainable development in Pakistan



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1. field exposure to inculcate positive attitudinal and behavioral change towards environment;
2. Mass awareness on hygiene and environmental health;
3. Establishment of a Centre of Excellence in Environment.

### DEVELOPMENT OF ENVIRONMENTAL EDUCATION IN PAKISTAN

The Ministry of Education, Government of Pakistan, in collaboration with Environmental Urban Affairs Division (now Ministry of Environment), implemented the Coordinated Environmental Education Project (CEEP) from 1989-1992, under which a number of pilot-activities aimed at training of teachers and teaching-aids for development of environmental education were carried out. Since the implementation of NCS in 1992, government and non-governmental organizations have also undertaken a number of pilot-projects aimed at greening the formal education system. These included introduction of environmental concepts in selected textbooks at primary level in the Northern Areas of Pakistan, and initiation of

diploma, degree and master level programs on environment. Furthermore, the Ministry of Environment and the curriculum wing of the Ministry of Education have implemented a project entitled Environmental Education Promotion (2004-2009) with a budget of USD 0.46 million, funded by Swiss Development Cooperation (SDC) under the auspices of National Environmental Action Plan-Support Program (NEAP-SP) an umbrella program being implemented with the assistance of UNDP and donor agencies to support realization of Government of Pakistan's National Environmental Action Plan. In addition, Allama Iqbal Open University, in collaboration with the Ministry of Environment, has taken an initiative to integrate environmental education concepts in the teachers training curricula of AIOU. The project worth Rs. 38.911 million, catering about 50,000 teachers annually, is expected to commence in 2009.

A summary of the institution offering Environmental Education in Pakistan is given in Table 1, together with the titles of the courses being offered.

**Table 1: Institutions Offering Environmental Education in Pakistan**

No.	Name of the Organization/ University/Institution	Establishment of Environmental Engineering/ Science/ Management Dept.	Year	Program/s Offered
1.	University of Karachi	Institute of Environmental Studies	1982	M. Sc. Environmental Science (Evening), M. Phil, and Ph. D
2.	NED University of Engineering and Technology, Karachi	Department of Environmental Engineering	1986	M. Sc. Environmental Engineering
3.	Mehran University of Engineering and Technology, Jamshoro	Institute of Environmental Engineering and Management	1993	M.E Environmental Engineering and Management
4.	University of Engineering and Technology, Peshawar	Environmental Engineering Division, Department of Civil Engineering	1995	MS and Ph. D. Environmental Engineering
5.	University of Engineering and Technology, Lahore	Institute of Environmental Engineering and Research	1996	M. Sc Environmental Engineering
6.	National University of Sciences and Technology, Rawalpindi	Institute of Environmental Science and Engineering	1996	MS and PhD in Environmental Engineering

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1.	Kinnaird College for Women, Lahore	Department of Environmental Science	1998	B. Sc. (Honors) and M.A in Environmental Science
2.	Fatima Jinnah Women University, Rawalpindi	Department of Environmental Science	2000	BS in Environmental Science Master in Environmental Science
3.	University of Peshawar	Department of Environmental Science	2000 1987	B. Sc., M. Sc. & Ph. D. Env. Sci. M. Sc. Environmental Planning and Management
4.	Law College, University of Punjab, Lahore	Dr. Pervaz Hassan Center for Environmental Law	2000	Postgraduate Diploma in Environmental Law
5.	Lahore College for Women University, Lahore	Department of Environmental Science	2000	B. Sc. (Honors), M. Sc. and Ph. D. in Environmental Science
6.	University of Punjab, Lahore	Institute of Environmental Science	2000	B. Sc. (Honors), and M. Sc. In Environmental Science
7.	University of Punjab, Lahore	Postgraduate Center for Earth Sciences	2000	M. Sc. and Ph. D. in Environmental Science
8.	Government College of Technology, Lahore	Department of Environmental Control Technology	2002	Diploma in Environmental Control Technology
9.	University of Agriculture, Faisalabad	Institute of Soil and Environmental Science	2003	M. Sc. (Hons.) and Ph. D. Soil and Environmental Science
10.	Balochistan University of Information Technology and Management Sciences, Quetta	Center for Environmental Management	2004	M. Sc. Environmental Management and Policy
11.	COMSATS Institute of Information Tech., Abbottabad	Department of Environmental Science	2004	B. Sc. Environmental Sciences
12.	Allama Iqbal Open University	Department of Environmental Science Department of Home and Health Sciences	2000 2003	BS Environmental Sciences M. Sc. Environmental design
13.	Islamic International University	Dep t. of Environmental Science	2007	BS, MS and Ph. D. in Environmental Science
14.	University of Arid Agriculture	Dep t. of Environmental Science	2007	M. Sc. Environmental Science

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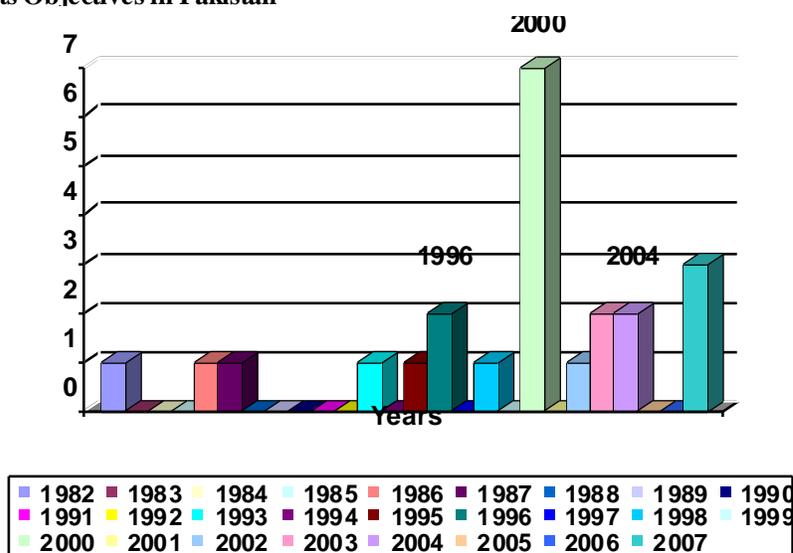


Fig. 2: Most of the institutions were established in year 2000 and after

As indicated from the summary of the institutions (Table 1) and Fig. 2, among the programs offered in the field of Environmental Science/Engineering/Management, etc., only a few universities offered degrees since 1980s or 90s. However, an increasing trend can be observed with the onset of 21<sup>st</sup> century. Spread over a decade or so, the Environmental Education and Awareness in Pakistan is recent and has still to mature.

### Demand and Supply Analysis

According to our estimate, the universities/institutes in Pakistan presently produce about 300 experts annually in the field of Environmental Science and Engineering<sup>1</sup>. Against the annual production of 300 experts, the analysis of the requirement suggests that about 13,000 experts in the field of Environmental Science would be needed over the next few years to fill the void in Pakistan (Table 2).

Table 2: Number of Experts required in the field of Environmental Science

No.	Category	Number	Experts required	Specific remarks
1.	Schools <sup>2</sup>	176286	8,814	Calculated on the basis of 1 expert per 20 schools.
2.	Colleges <sup>3</sup>	1000	1000	At least 1 expert per college.
3.	Universities	113	791	7 faculty members to initiate a department in the university.
4.	Industry <sup>4</sup>	2000	2,000	High waste-producing industries require at least 1 expert each, for waste minimization and cleaner production.
5.	Governmental organizations and NGOs		300	EPAs, District Environmental Officers (100), Agriculture and Livestock Departments and NGOs.
Total			12,905	

<sup>1</sup> Farooqi, A., H. Fatimah and Zahid Ullah (2006) Scheme of Studies for 4-years BS in Environmental Science at AIOU: 2-3

<sup>2</sup> Source: Academy of Educational Planning and Management, Ministry of Education.

<sup>3</sup> A total of 461 Colleges are affiliated with Punjab University, Lahore only.

<sup>4</sup> [http://www.statpak.gov.pk/depts/fbs/statistics/manufacturing\\_industry/summary\\_report.pdf](http://www.statpak.gov.pk/depts/fbs/statistics/manufacturing_industry/summary_report.pdf)

The table clearly indicates that the existing institutes are producing hereby 2.3% of the present overall national requirement.

The introduction of Environmental Education at school level in a formal or informal manner is now being promoted in Pakistan. In order to create a global awareness about the necessity of preserving the environmental quality, mass media like newspapers, radio, TV have been quite active since the last decade. Though initially the media was politicized, but now it has become somewhat more objective, responsive and unbiased. However, there still remains a necessity for the Pakistani media to develop basic conceptual and scientific understanding of the environmental issues in local and regional context.

### FOOD FOR THOUGHT

Achievement of the national objectives regarding environmental education cannot be accomplished merely by introducing environmental sciences and engineering programs at university level, unless an equal effort is made to integrate environmental education curricula in the primary and secondary school syllabi. Furthermore, an environmentally aware and sensitized generation cannot be produced if the school, college and university teachers/tutors are not themselves environmentally literate. Integrating environment in teacher-training programmes at all levels would have domino effect in bringing about positive attitudinal and behavioral changes towards environment in the generations to come.

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