**Executive Programe**

**ENVIRONMENTAL POLLUTION -**

**HAZARDOUS HEALTH AND ECONOMIC IMPACTS**

**11-13 February, 2019**

**RATIONALE**

 Environmental pollution is the subject of grave concern all over the world. It has a wide array of concerns which are affecting life on earth. Environmental pollution is defined as “the contamination of the physical and biological components of the earth/atmosphere system to such an extent that normal environmental processes are adversely affected[[1]](#footnote-1). Scientists claim that environmental pollution is the unfavorable alteration of our surroundings, wholly or largely as a byproduct of man’s actions, through direct or indirect effects of the changes in the energy pattern, radiation levels, and chemical and physical constitution and abundance of organisms. Environmental pollution is a global problem and is common to both developed as well as developing countries, which attracts the attention of human beings for its severe long-term consequences. The decline in environmental quality as a consequence of pollution is evidenced by loss of vegetation, biological diversity, excessive amounts of harmful chemicals in the ambient atmosphere and in food grains, and growing risks of environmental accidents and threats to life support systems. Pollution is viewed from different angles by different people but is commonly agreed to be the outcome of urban-industrial and technological revolution and rapacious and speedy exploitation of natural resources, increased rate of exchange of matter and energy, and ever-increasing industrial wastes and urban effluents[[2]](#footnote-2).

 Pakistan is a signatory of international agreements and holds the constitutuional responsibility to save people from environmental pollution. This implies that both federal and provincial governments are obligated to legislate on matters governing natural resources. In reality, laws pertaining to the safe environment is a neglected subject. Challenges related to land degradation and desertification, biodiversity loss, water depletion and degradation, solid waste management, air quality degradation, environment-related health issues, degradation and depletion of coastal and marine resources, and the impacts of natural disasters are just some of the most important environmental consequences resulting from unsustainable development.

Air is polluted with smoke emitted by vehicles, industrial release of harmful chemicals, burning of garbage, and gaseous pollutants such as; sulfur dioxide, carbon dioxide, and Chlorofluorocarbon (CFC) and nitrogen oxide. The challenge of water pollution is a result of the contamination due to sewage, industrial waste, agricultural pesticides. Water reservoirs are drowning in chemicals from heavy metals such as arsenic and [mercury](https://www.nrdc.org/experts/mae-wu/factsheet-limiting-mercury-pollution) to pesticides and [nitrate fertilizers](https://www.nrdc.org/onearth/sickening-swill). These toxics, if ingested, can cause many health issues such as cancer, altered brain functions, hormonal disruptions, stomach problems, and hepatitis. Water pollution is greatly affecting marine and wildlife. Deforestation and increasing threat to coastal and marine life impose a huge socioeconomic loss to country’s wildlife, trade, and environment.

 The Paris Agreement requires countries to pledge not to just keep global warming “well below two degrees Celsius,” but also to “pursue efforts” to limit warming to 1.5[[3]](#footnote-3) degrees by 2018. Pakistan is unable to attain the level by reducing emissions. Pakistan and other mid-latitude countries are more vulnerable to increase in temperature and face destructive events of floods, droughts and heat waves. These events result in a huge economic loss and claim many lives. Smog is another environmental challenge which has engulfed the country resulting in hazardous impact on lives. It accounts for a rapid sprout in fatal health problems, including exacerbation of asthma, allergies, eye infections, respiratory tract infections, and cardiac pathologies leading to premature death[[4]](#footnote-4).

 According to the Environmental Performance Index (EPI) 2016, computed by Yale University, Pakistan ranks 144 out of 180 countries[[5]](#footnote-5), making it one of the most vulnerable countries against environmental risks and hazards. Similarly, the Global Climate Risk Index 2018 positions Pakistan at 7th position[[6]](#footnote-6) among the most adversely affected countries due to climate change. While the risk posed by climate change itself is considerable, these is also inability and lack of willpower on part of the federal and provincial governments to effectively monitor and counter environmental degradation and climate change. It is widely well-known factor that human health is dependent on safe environment. The large-scale changes in local ecosystems have serious implications on health outcomes in Pakistan. According to estimates from the WHO Global Health Observatory, about 200 deaths per 100 000[[7]](#footnote-7) population are attributable to environmental factors in Pakistan. It is estimated that 24% of the global disease burden and 23% of all deaths can be attributed to environmental factors[[8]](#footnote-8). About 36% of this burden affects children from 0 to 14 years of age[[9]](#footnote-9).

 Good governance, creation and dissemination of information is essential to inform policy makers and decision makers for drafting policies based on evidence. The government needs to get international grants worth between $7and $14[[10]](#footnote-10) billion each year to be able to adapt to climate change. The required amount is difficult to manage every year. Hence mobilization of existing resources is essential by making a transition towards environmental friendly initiatives. Introduction of electric automobiles, adoption of renewable energy methods, plantation of trees, forestation, creating mass awareness for using eco-friendly appliances, recycling to reduce carbon emission, and burring of garbage instead of burning. These all environmental concerns need a consolidated approach of federal and provincial governments to devise a robust governance mechanism. Strategic environmental assessment is essential by installing air quality monitors and warning factories to add pollution filters. Access to clean water should be ensured by technology and law. Role of Media in creating mass awareness is essential. The aim of the course is to view pollution in an ambit of legislation, policymaking and sound decisions based on evidence.

1. **OBJECTIVES**
	1. An analytical overview of geographical changes affecting climate change.
	2. Human intervention with nature causing global warming.
	3. Review of environmental degradation in view of causes and impact assessment.
	4. Investigating the hazardous impact of pollutants from industry, agriculture, sewage water to devise mitigation strategies.
	5. Evaluating the impact of urbanization and deforestation.
	6. Understanding interlinkages of smog pollution and human health.
	7. Effective policy formulation for pollution control and developing supportive database.
2. **METHODOLOGY**:
	1. Learning is a multifaceted phenomenon for which some unlearning is required before the new knowledge is accepted. Hence there would be combination of methods used in this course mostly interactive based.
	2. Presentation by the resource persons to be followed by discussion and comments.
	3. Case study presentation with the intention to highlight the key issue which is cross sectoral.
	4. Syndicate style group discussion and presentation by the participants.
	5. Opportunity for the participants to make presentations individually and as a group.
	6. Developing insights with the interactive discussions to frame way forward strategies.
3. **EVALUATION**:

 Course evaluation would be done by the participants at the end of the course.

1. [https://www.sciencedirect.com/topics/earth-and-planetary-sciences/environmental-pollution(accessed](https://www.sciencedirect.com/topics/earth-and-planetary-sciences/environmental-pollution%28accessed) 14 November, 2018) [↑](#footnote-ref-1)
2. ##  Iyyanki V. Muralikrishna, & Valli Manickam, Science *and Engineering for Industry* (Amsterdam: Elsevier, 2017), 1-4

 [↑](#footnote-ref-2)
3. Rabiya Jaffery, "Pakistan’s Climate Change Plight" *The Diplomat* (March 21, 2018) [↑](#footnote-ref-3)
4. Ramsha Riaz and [Khizar Hamid](https://www.ncbi.nlm.nih.gov/pubmed/?term=Hamid%20K%5BAuthor%5D&cauthor=true&cauthor_uid=29581923)“Existing Smog in Lahore, Pakistan: An Alarming Public Health Concern” [Cureus](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5866107/). 2018 Jan; 10(1): [↑](#footnote-ref-4)
5. Noor Ahmed Junaid, Ijaz Hamza & Zafar Ali, *Economic Impacts and Health Implications of Non-Compliance of the Leather and Textile Industry*. WWF Report (2018),15 [↑](#footnote-ref-5)
6. Ibid [↑](#footnote-ref-6)
7. Environmental health, World Health Organization(WHO), Eastern Mediterranean(2018)[http://www.emro.who.int/pak/programmes/environmental-health.html(accessed](http://www.emro.who.int/pak/programmes/environmental-health.html%28accessed) 16.11.2018) [↑](#footnote-ref-7)
8. Ibid [↑](#footnote-ref-8)
9. Ibid [↑](#footnote-ref-9)
10. Rabiya Jaffery, "Pakistan’s Climate Change Plight" *The Diplomat* (March 21, 2018) [↑](#footnote-ref-10)