

Air pollution is considered to be primarily an urban problem in Pakistan as the rate of urbanization increases. In rural areas, air quality is considered to have been negatively affected in areas adjacent to industrial estates or isolated industrial plants set up outside city limits. The notion of maintaining good air quality has been the center of attention of concerned stakeholders. The notion of maintaining good air quality has been the center of attention of concerned stakeholders in Pakistan. Very little work has been initiated in Pakistan on integrated AQMS and mostly isolated in nature.

## **Chapter 2      Air Quality – as we inhale**

Pakistan is an arid country with rainfall ranging as low as 80 mm in the south to as high as 1600 mm in the north. Moreover, the wind speed, which is essential for flushing of pollution, is also low in our cities. In the dry and low wind days, natural dust and anthropogenic pollution, when generated in excess, takes longer time to disperse off. Over the last few years average rainfall has declined in many parts of the country. The levels of suspended particulate matters and other pollutants, which have active co-relation with meteorological conditions, are likely to increase given the dry air condition prevails.



### **Pressures**

One of the major environmental issues is degradation of ambient air quality particularly in urban areas. Various surveys show that air pollution levels in cities have either crossed safe limits or have reached the threshold values. There are several pressures contributing to air pollution increase. Following sub-sections present some of the key sources for affecting ambient air quality in the country.

### **Industrial Pollution**

Stationary sources of air pollution have been on the increase in Pakistan as well as the air pollution caused due to industrialised areas especially around petroleum refineries, petrochemical plants, cement factories, fertiliser factories, and iron steel industries. These industries are also enlarging their activities especially those located in Karachi, Lahore, and other industrialised cities, which in turn exacerbate the pollution levels.



Large quantities of air pollutants are also being emitted by industrial units such as a power plant, according to their fuel consumption. There are no specific countermeasures or improving process installed in many of these industries. A rough estimate suggests that the fuel consumption is almost equivalent to the emission quantity of air pollutants (SO<sub>2</sub> etc.).

### **Suspended Particulates**

The most serious issue of air quality in Pakistan is the presence of excessive suspended particulate matter (SPM) present in the ambient air. The major sources of SPM are vehicles, industry, burning of solid waste, brick kilns and natural dust.

The origin of suspended particulate matter (SPM) source may be a natural phenomenon, such as unpaved roads and places uncovered by green grasses of trees. Fine particles size of soil may be raised in the form of dust cloud by driven motor vehicles and by strong wind blow. Other origins may be considered coming from artificial emission of SPM such as emission gasses including the particulate matter from the motor vehicle and industrial activity. Other natural sources of affecting the SPM level are higher including kind of surface soil, quantity of rainfall, relative moisture content in the atmosphere, and cleaning condition on paved roads and under construction road.

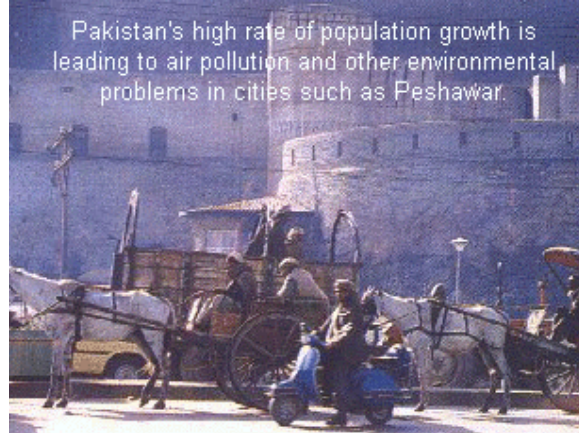
### **Indoor Air Pollution**

Some 314.9 million tons of wet weight animal excreta are produced each year. Only half of animal manure is collected and of the collected, again only half is returned to the soil, while the other half is burnt as fuel for cooking purposes. This causes high indoor air pollution in rural areas. Respiratory diseases are quite common among villagers. The installation of biogas plants in this context would provide answer to this problem in part but efforts to propagate these plants have met great success. Government has planned to deal with this issue through one of the components of Clean Air Programme under the umbrella of the National Environmental Action Plan (NEAP) approved by the Pakistan Environmental Protection Council.

### **Increasing Traffic Trends**

Another source of degradation in ambient air quality is the presence of carbon monoxide (CO) in the air occurring due to incomplete combustion of fuel. The major source is from motor emission.

In Pakistan, the number of vehicles have jumped from 0.8 million to about 4.0 million within 20 years showing an overall increase of more than 400%. The average compound growth of vehicles is about 11 percent per annum. Since 1980, the maximum growth has been seen in 2-stroke vehicles such as delivery vans which are approximately 1,751%, followed by motor cycles 541% and Rickshaws 159%. According to a World Bank study carried out in Bangladesh and India, the major cause of suspended particulate matters was due to 2- stroke vehicles using straight mineral oil (instead of 2T oil) as lubricant and use of excessive quantity of lubricant (12%) instead of 2% for motor cycles and 3% for 3 wheelers.

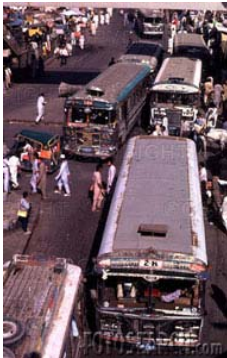


Diesel trucks and buses have also increased at an alarming rate of 200-300% since 1980. Diesel vehicles due to overloading, faulty injection nozzles and weak engine emit excessive graphitic carbon (visible smoke). This situation is very common in our country. Diesel Particulate Filter (DPF), which is a device used in many countries to control emission in diesel vehicles, cannot be used in Pakistan as it requires low sulphur diesel that is 0.05-0.5% sulphur (available diesel in market contains 1% sulphur).

### **Use of Leaded Petrol**

Another serious issue is that of high content of lead in petrol, which presently is 0.35 gram/liter. Different studies carried out by Pakistan Medical and Dental Association and Agha Khan Medical Hospital have confirmed presence of high concentration of blood lead levels in school children, traffic police and adults. Road side air samples also showed high lead in air. Many countries of the region including Bangladesh, China, India, Japan, Philippines, Thailand and almost all Europeans countries have banned lead in gasoline.

### **Noise Pollution**



A related issue is that of noise pollution. The major sources of noise pollution are transport sector, heavy industry, manufacturing industry, aviation, textile, polyester, refineries and power stations. In major cities – Karachi, Lahore, Peshawar, and Quetta – the noise levels are much higher than the desirable limits. The high noise is also largely on account of pressure horns, faulty silencers and poorly maintained motor engines. In order to effectively manage noise pollution no specific programs exist. There is a lack of proper standards, noise limits for industries and assessment of noise levels in various work environments. Noise control measures and hearing surveillance mechanisms do not exist in Pakistan, which pose a serious policy concern.

### **State**

In an attempt to assess the deterioration in air and water quality in the major cities of Pakistan, JICA and Pakistan EPA undertook a project to measure air and water quality in three cities, Lahore, Rawalpindi, and Islamabad. This study forms the initial part of the agencies' plan to stem the deterioration.

Pak-EPA carried out a landmark study in 2000 for assessing ambient air quality of 3 major cities – Lahore, Rawalpindi and Islamabad. The study reported presence of much higher levels of SPM including PM<sub>10</sub> and Pb than the WHO standards. Since the study was supported through JICA, comparison with Japanese standards was one of the key analysis parameters. The average SPM data in 3 cities showed that SPM concentration exceeded 3.8 times for the Japanese standards (200 µg/m<sup>3</sup>) and 6.4 times from WHO standards (120 µg/m<sup>3</sup>). The levels of SO<sub>2</sub>, NO and CO were found in excess of acceptable standards in some areas but the average levels were found below WHO guidelines. The study found that Lahore had the highest concentration of SPM while Rawalpindi is less contaminated with SPM. Islamabad had least concentration of SPM showing marginally better environmental conditions. Presence of such a high levels of SPM in the air is certainly a matter of concern due to its serious health implications for public. The changing patterns of SPM concentration in day time did not show typical 2 peaks at rush hour in the morning and at evening whereas SPM peaks appeared late at night showing a probable relationship between SPM, wind speed and traffic count. In case of Lahore especially, the wind speed in the night decreased and a clam condition was recorded except for one of the sampling points which depicted SPM value effected by traffic count.



Comparison of SPM Data to International EAQS (times higher)

Sampling Point	Data	Lahore					Rawalpindi			Islamabad	
EAQS		Yateem Khana Chowk	Azadi Chowk	Qurtaba Chowk	Lohari Gate	Shahrahe Quaid-e-Azam	Raja Bazar	Murree Road	Pir Wadhai	Aabpara Chowk	I-9
Japanese Standard 100ppb (1hr)	Ave.	5.2	3.7	4.7	4.4	4.2	3.9	4.1	2.6	2.5	2.7
	Max.	6.8	6.7	7.7	6.6	7.0	5.8	6.1	7.0	4.7	4.3
WHO Guideline 120 ppb (1hr)	Ave.	8.7	6.2	7.8	7.4	7.2	6.6	6.9	4.3	4.2	4.5
	Max.	11.4	11.2	12.8	11.0	11.7	9.7	10.1	11.7	7.6	3.0
Japanese Standard	All City Ave.	3.80	Each City Ave.			4.44	3.53			2.60	
WHO Guideline	Ave.	6.38				7.46	5.93			4.35	

The air and water quality monitoring that was conducted in the above mentioned 3 cities provided also a basic understanding of issues associated with standard field sampling, measurement, and laboratory test methods and procedures. Urban air quality results of these cities presented an alarming situation as 2 of the criteria air pollutants (CO, SO<sub>2</sub>, NO<sub>x</sub>, PM<sub>10</sub> and Pb), including PM<sub>10</sub> and NO<sub>x</sub>, exist in higher levels than the WHO limits. This situation calls for a well-structured, countrywide air quality monitoring program.

The study conducted by Pakistan Environment Protection Agency in collaboration with JICA also provided first hand information for 3 cities on concentration of carbon monoxide. The findings painted a gloomy picture of ambient air quality in nearly all sampling points with a few exceptions in Islamabad. The hourly maximum values reached to 9.4 ppm at 2 monitoring sites in Lahore and Rawalpindi, Islamabad had lower CO than these cities. There may be several reasons for it one may be the different quantity of vehicle count in each city. Lahore sampling points were rather crowded having more traffic load among the 3 cities except Murree Road in Rawalpindi.

CO concentration in 3 Cities (ppm)

Sampling	Lahore	Rawalpindi	Islamabad
----------	--------	------------	-----------

Point										
Term of Data Evaluation	Yateem Khana Chowk	Azadi Chowk	Qurtaaba Chowk	Lohari Gate	Shahrahe Quaid-e-Azam	Raja Bazar	Murree Road	Pir Wadhai	Aabpara Chowk	I-9
Hourly Average Data in a Day	2.3	2.7	2.9	2.3	3.9	1.4	2.4	1.7	1.2	1.9
Hourly Maximum Data	7.0	9.4	9.4	4.2	6.8	2.8	6.7	3.6	3.0	3.6
Hourly Average Data in each City	2.82					1.83			1.55	
Hourly Maximum Data in each City	7.36					4.04			3.30	
All Hourly Average Data	2.27									

The table shows that all comparison of CO data to International Air Quality Standards were lower than Japanese and WHO standards.

#### Comparison of CO Data to International EAQS (times higher)

Sampling Point	Data	Lahore					Rawalpindi			Islamabad	
EAQS		Yateem Khana Chowk	Azadi Chowk	Qurtaaba Chowk	Lohari Gate	Shahrahe Quaid-e-Azam	Raja Bazar	Murree Road	Pir Wadhai	Aabpara Chowk	I-9
Japanese Standard 100ppb (1hr)	Max.	<	<	<	<	<	<	<	<	<	<
WHO Guideline 120 ppb (1hr)	Max.	<	<	<	<	<	<	<	<	<	<

The reason for such high concentration could be associated to several factors. CO measurement data by Gastec test tube method was taken so close to the mobile emission source where the distance between sampling site and car stream was roughly 2~3m therefore sometimes, the possibility of sucking by syringe high concentration of CO gas directly from the emission source. Sampling Period for CO, also measurement by Gastec testing tube method indicated the limitation of temperature within 40°C however actual temperature on that day in the morning was 36°C, mid day was 41°C and in the late afternoon was 39°C. Observation at high temperature shows that the color in the test tube was quickly finished before sucking < 50 ml of air. Nevertheless, even in the face of the above factors, the ambient air quality remains a point of concern for environmental regulatory authorities.

Any relationship between the number of vehicles and SO<sub>2</sub> concentration was not recognized in the Pak-EPA study. Diesel oil in Pakistan contains about 1% of sulphur compounds in it therefore there should be some relationship between SO<sub>2</sub> concentration and diesel vehicles numbers at sampling point. Emission gas volume of diesel cars in Lahore and Rawalpindi are mostly smaller size to compare with other foreign cities. Hence, it could not be estimated as polluted factor by the numbers of checking the diesel cars there, as compared to large transport bus. The other reason could have been that diesel engine combustion conditions seem incomplete in small diesel engine cars resulting in a lower conversion rate from the sulphur compound in it, to form the SO<sub>2</sub> gas. Generally observed, the SO<sub>2</sub> in 3 cities were not so high as compared with intentional air quality standards and WHO guidelines. Only one sampling point in Lahore exceeded from both EAQS and Who guidelines.

#### SO<sub>2</sub> Data in 3 Cities (ppb)



Sampling Point	Lahore					Rawalpindi			Islamabad	
Term of Data Evaluation	Yateem Khana Chowk	Azadi Chowk	Qurtaba Chowk	Lohari Gate	Shahrahe Quaid-e-Azam	Raja Bazar	Murree Road	Pir Wadhai	Aabpara Chowk	I-9
Hourly Average Data in a Day	48	36	41	40	58	32	25	35	36	21
Hourly Maximum Data	88	72	95	211	95	35	47	61	60	47
Hourly Average Data in each City	44.6					30.7			28.5	

The table shows that only data in Lohari Gate, Lahore was 2.1 time higher than Japanese and 1.8 times higher than WHO standards.

#### Comparison of SO<sub>2</sub> Data to International EAQS (times higher)

Sampling Point	Data	Lahore					Rawalpindi			Islamabad	
EAQS		Yateem Khana Chowk	Azadi Chowk	Qurtaba Chowk	Lohari Gate	Shahrahe Quaid-e-Azam	Raja Bazar	Murree Road	Pir Wadhai	Aabpara Chowk	I-9
Japanese Standard 100ppb (1hr)	Max.	<	<	<	2.1	<	<	<	<	<	<
WHO Guideline 120 ppb (1hr)	Max.	<	<	<	1.8	<	<	<	<	<	<

The Pak-EPA study also assessed the NO and NO<sub>x</sub> occurrence in the 3 cities. Since these gases occur mainly due to combustion of fossil fuels, the primary sources of NO and NO<sub>x</sub> are mobile emission as well as stationery sources such as boilers and furnaces of industrial activities. The results of 3 cities showed levels of NO and NO<sub>x</sub> in 2 sampling points from Lahore and 1 from Islamabad exceeding from WHO standards. In addition, the recorded ozone (O<sub>3</sub>) data in 3 cities were found to be within the Japanese and WHO standards.

### Impact

Particulate matter in air is classified broadly into falling dust and suspended dust. The suspended dust is further classified into particulate matter of which the grain diameter is 10 μm or less for the environment standard and others. Research has proved a direct relationship of respiratory diseases with level of SPM, PM10, PM2.5 and other gases in the ambient air. Dust allergy, throat irritation and cough are very common symptoms of health problems due to air borne emissions. Direct



affects of air pollution on health, climate change, vegetation, rainfall patterns and overall ecosystem hold significant economic values for a country like Pakistan. The incidence of extended winter fog in many areas lasting for 2 to 3 weeks has been a recently phenomenon over past few years. This fog has contributed to economic losses, aggravated respiratory and cardiovascular diseases as well as increased cardio arrest rates. A study done in 2002 had estimated that approximately 16.28 million people – around 40% of the total urban

population – in Pakistan is exposed to air pollution which could be directly associated with economic costs of Rs.25.7 billion a year on account of health.

CO is considered a highly toxic gas as it reacts directly with haemoglobin (Hb) in the blood replacing oxygen. The combining power with Hb is about 210 times stronger than O<sub>2</sub> thus preventing the natural oxygen carrying function. If there is 30 ppm of CO concentration for > 4 – 6 hours, this CO-Hb ratio in the blood could reach too 5% resulting in obstruction to exchange the function from CO<sub>2</sub> to O<sub>2</sub> by Hb.

Another important air pollutant are hydrocarbons (H.Cs) consisting of toxic gases such as benzene, toluene, xylene, methyl ethyl ketone and styrene. These gases also have toxic effect on human health and benzene, toluene and xylene are usually known to be one component for promoting photochemical reaction. High ozone concentration has direct effects on human respiratory organs and mucous membrane is known in Japan. Difficulty in breathing and pain in eyes and throat are common symptoms.

## **Response**

Very little work has been initiated in Pakistan on integrated air quality management system. One significant achievement has been the elimination of lead gasoline. The government has also aggressively pursued fuel switching from fuel oil to natural gas in the industry. Other response measures aiming at an improvement in the ambient air quality have been multi-faceted.

## **Industrial Pollution Control**

Bringing industrial pollution levels of existing industry to the limits specified in the NEQS has been one of the priority areas for the government. After the establishment of NEQS, initial response of industrial sector to pollution control was discouraging perhaps due to unawareness, non-availability of indigenous technology and lack of resources. Changing mindset and convincing industrial community of the harmful effects of emission has been a lengthy and difficult task. A two pronged approach is being adopted to effectively implement the NEQS through introduction of self-monitoring and reporting system coupled with development of Environmental Improvement Plans (EIPs). The second approach is to enforce the NEQS through issuance of Environmental Protection Orders under section 16 of the PEPA. The former is a "common sense approach" whereby the industry will voluntarily provide their levels of pollution to EPAs on regular basis and meantime develop their EIPs as part of future planning. The later is a "command and control approach" for those industries neither willing to join self-monitoring programme nor desirous to improve their environmental conditions.

## **Levy of Pollution Charge**

Implementing pollution charge has been one of the most significant achievements of the government in addressing environmental protection and rehabilitation. After several meetings with trade and industry and the provincial governments consensus was built on the mechanism of calculation, collection and deposition of Pollution Charge. The pollution charge is to be deposited in Sustainable Development Fund. The governments of Punjab and NWFP have officially communicated their consent to the proposed mechanism while the governments of Sindh and Balochistan are yet to take concrete measures. The Pollution Charge formula was consented by the PEPC while the mechanism for its collection and deposition was negotiated with the industry representatives who agreed to follow mechanism on the line of Export Development Fund (EDF). Following EDF mechanism the Pollution Charge collected, will first be deposited in the provincial treasury and then the provincial governments will provide grant equivalent to the deposited amount in the Provincial Sustainable Development Fund to be established by each province under the PEPA 1997.

### **Legal Action against Polluters**

For the first time, provincial environmental protection agencies have started issuing Environmental Protection Orders to polluters under section 16 of the PEPA. It has been reported that EPA, Punjab has served 143 EPOs; EPA Balochistan 89 and Pak-EPA 3 EPOs to polluting industry while EPA Sindh issued several show cause notices but due to compliance by the industry they did not serve EPOs. On public complaints, a few industrial units, which were causing excessive pollution, were even closed down or served with warning notices. Government had established 2 Environmental Protection Tribunals – one each in Karachi and Lahore – to decide environmental cases and appeals against the orders of EPAs. There are plans to establish 3 more Tribunals in different cities.

### **Environmental Standards Committee**

After expiry of the NEQS grace period granted to the industry, the industry representatives requested deferment of implementation of the NEQS for some years to enable industry to prepare and take corrective actions. They also pointed out stringency of the standards and suggested their amendment. Government did not agree to defer implementation of the NEQS however a high level committee was constituted to determine the modalities for enforcement of the NEQS. The Committee holds the mandate to review the standards and propose amendments, if and where deemed necessary. The Committee is represented by, trade and industry, NGOs, environmental experts and government institutions. This Committee came up with a set of recommendations that included amendment in the NEQS; certification of laboratories; introducing self-monitoring and reporting system; levy of Pollution Charge in accordance with agreed formula; and awarding incentives to industry. PEPC accepted recommendations of the Committee and the Ministry of Environment in consultation with stakeholders revised the NEQS and notified Environmental Laboratories Certification Regulations, 2000.

### **Self-Monitoring and Reporting**

A Pilot phase of self-monitoring and reporting system was initiated for 50 industrial units at the federal level and was completed successfully in March 2001. Now a full-scale implementation is to be undertaken by the provincial EPAs. Government has also offered incentives to industry in terms of reduction of custom duty on import of anti-pollution equipment. As the data/information on status of self-monitoring largely unavailable, proper analysis of compliance of lack thereof is difficult to derive on this important initiative.

### **Investment by Industry for Environmental Improvement**

On the advice of the PEPC, the Ministry of Environment opened dialogue with the industry. Consequently, the industry which was initially reluctant to adopt environmental measures soon realized that pollution control is not a luxury but essential for the market economy and public health. The FPCCI and other industrial associations took initiative and created environmental cells within their organizations. FPCCI, with the assistance of Dutch funding, initiated Environment Technology Programme for Industry (ETPI) at a cost of Rs. 260 million. This was perhaps the first break through which instigated industrial units to make investment in the environmental improvement. Industry claims that an investment of Rs. 2,700 million has been realized during the last four years and they planned further improvement of Rs.1740 million in the near future. Despite these achievements, extra efforts are still required to promote green productivity and adoption of ISO 14000. The linkages are being strengthened between trade and environment to promote manufacture of environment-friendly products for competing international export market.





It has been estimated that at present about Rs. 800 million per annum is the size of environmental investments in the industry sector of Pakistan. It is assumed that growth rate of environmental investments will be in the range of 5-8% per annum and with this growth rate, the environmental investments in the country by year 2010 will be in the range of 1.3 to 1.7 billion per annum. It is expected that the international market pressure, enforcement efforts by the federal and provincial EPAs, and better macro-economic and governance conditions, the environmental investments will further enhance.

### **Establishment of Cleaner Production Center**

One cleaner production center for petroleum sector is already functioning with the assistance of UNIDO and other for leather industry in the public sector will start soon in Sialkot. These cleaner production centres are envisaged to promote adoption of ISO 14000 and help improve environmental performance of the industry. Combined waste treatment plant for Kasur tanneries is in the final stage of completion while similar arrangements are being planned in Sialkot and Karachi.

### **Improving Ambient Air Quality**

Realizing the issue of degradation of air quality the Government has taken various steps for its improvement to protect public from excessive exposure to pollution. Some significant measures taken in the recent years are:

- Establishment of motor vehicle emission standards and review of strengthening of Motor Vehicle Examination system in the country
- Implementing lead and sulphur phase out programs for providing clean fuels
- Due to incentive regime offered by the Government, about 150,000 petrol vehicles have so far been converted to CNG and a number of new CNG stations have set up in the country. Efforts are also being made to convert diesel vehicles to CNG
- Setting up of 15 tune up stations for petrol and diesel vehicles and establishing a revolving loan of US \$ 3 million to encourage installation of additional tune up stations in the private sector
- Constitution of Environmental Squads of traffic police at federal and provincial levels
- Implementing of industrial emission standards

### **Introduction of Clean and Alternate Fuels**

Government's clean fuel programme is being implemented to reduce air pollution caused by vehicular emission. As part of the clean air program 200,000 cars have been switched over to CNG. Rickshaws (3 wheelers) have also been successfully converted to CNG with the assistance of Canadian International Development Agency (CIDA) in several parts of the country. Although this has been done on experimental basis but at the same time efforts are being made to promote use of CNG in rickshaws through motivation and some incentive schemes. The Energy Conservation Centre (ENERCON) has setup tune up stations in different locations and now a line of credit is being established to encourage private sector to set up tune up stations for vehicles.

### **Disbanding Pressure Horns**

After the Cabinet decision on banning of pressure horns, several campaigns have been launched at the federal and provincial levels. Thousands of pressure horns were removed from vehicles and confiscated while negotiations with pressure horn manufacturers have been initiated to discourage manufacturing of multi-stage pressure horns. Noise standards are also being formulated for the first time in Pakistan.

### **Implication of Trade Environment Linkage**

With the movement of trade liberalization, WTO established trade linkages with environment. International standards like ISO 9000 and ISO 14000 are recognized as quality criteria for products and environmental performance. International market demands environment-

friendly products but Pakistani export industry is not tuned to meet this challenge and seek incentives from the government to comply with the environmental standards. Government and industrial associations are striving to create awareness among entrepreneurs and promoting adoption of ISO standards. On the other hand, industrial sector in Pakistan has serious problem of capital investment due to recession. There is currently no line of credit available for adoption of ISO standards or procurement of anti-pollution technology and the government is seriously contemplating to address this.

### **Pakistan National Communication to UNFCCC**

Pakistan signed the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 and ratified it in 1994. The ratification of the Convention triggered a series of activities in Pakistan regarding climate change issues. These included the Asia Least-Cost Greenhouse Gas Abatement Strategy (ALGAS) project in 1998, which was the first comprehensive national project on climate change and that covered both quantification of emissions and the setting out of a long-term emissions reduction programme as well as the Country Case Study on Climate Change Impacts and Adaptation Assessments in Pakistan also in 1998. The study assessed the impact of Climate Change on four major sectors of economy, i.e. agriculture, forestry, water resources, and meteorology. The government also constituted a National Study Team (NST) to prepare Pakistan's National Communication Report to UNFCCC. The NST consisted of consultants, Pakistan Agriculture Council, Pakistan Forest Institute, National Institutes of Oceanography, Pakistan Science Foundation, ENVORK (consulting firm), Marine Investigators and some independent sector experts.

### **Pakistan's Clean Air Program**

The Five Year Plan 2005-2010 of the government has a comprehensive Pakistan's Clean Air Program and Noise Pollution Control Program identified for improving ambient air quality of the country. An estimated Rs.4.3 million is earmarked for air and noise pollution control initiatives. The program focus on ambient air quality monitoring systems, inspection centres establishment, air quality surveillance system, national noise survey, noise reduction and hearing conservation programs.

Project/Program	Estimated Cost (Rs. million)		PSDP 2005-06	PSDP 2006-07	PSDP 2007-08	PSDP 2008-09	PSDP 2009-10	Total
	Local	FEC						
<b>Ongoing</b>								
Establishment of Continuous Air Monitoring System in 5 Major Cities								1,089.10
<b>Proposes</b>								
Establishment of MV Inspection Centres in Pakistan	60	240	75	90	60	45	30	300.00
Increasing Vegetation Area in Cities/Urban Areas (20 cities within 200 km/city)	50	-	12.50	15	10	7.50	5	50.00
Pollution Control Program for SMEs	75	-	18.75	22.50	15	11.25	7.50	75.00
Traffic Engineering Management Program	50	-	12.50	15	10	7.50	5	50.00
Establishment of Air Quality Surveillance Centres (5 centres)	250	-	-	75	75	50	50	250.00
Continuous Air Quality Monitoring of 5 Cities	200	800	-	300	300	200	200	1,000.00

(Hyderabad, Faisalabad, D. I. Khan, Gujranwala, Gawadar)								
Brick Kiln Pollution Control/Relocation Program	150	-	-	45	45	30	30	150.00
Indoor Air Pollution Monitoring (urban + rural areas)	30	-	-	9	9	6	6	30.00
Installation of Roadside Air Cleaners in Major Cities	200	800	-	-	500	250	250	1,000.00
Promote LPG Plants in Hilly Areas (Chitral, Gilgit, Skardu)	300	-	-	-	150	75	75	300.00
National Noise Survey	5	-	1.25	1.50	1.00	0.75	0.50	5.00
National Noise Reduction Project – I, II, III	30	-	-	9	9	6	6	30.00
National Hearing Conservation Program	50	-	-	15	15	10	10	50.00
Installation of Noise Monitors in Major Cities	15	-	-	-	7.50	3.75	3.75	15.00

Source: Planning and Development Division, GoP

---

#### Chapter Reference:

- Government of Balochistan, Environment Protection Agency – Environmental Laboratory Data on Air and Water
- Government of NWFP and IUCN – The World Conservation Union, 1996 – Sarhad Provincial Conservation Strategy
- Government of Japan, Environment Agency, 2000 – Quality of Environment in Japan
- Government of Pakistan, Ministry of Environment, Local Government and Rural Development, 2002 – Pakistan Country Assessment Report
- Government of Pakistan, National Energy Conservation Centre, 2005 – Standardisation of Automotive Lubricants: Draft Complete Report
- Government of Pakistan, Pakistan Environment Protection Agency and Japan International Cooperation Agency, 2000 – 3 Cities Investigation of Air and Water Quality: Lahore, Rawalpindi and Islamabad
- Government of Pakistan, Pakistan Environment Protection Agency, 2002 – Information Package on Self-Monitoring and Reporting by Industry
- Government of Sindh, Environmental Protection Agency, 1999 – Report on Industrial Monitoring of Various Sectors (118 Industries) Monitored by EPA Sindh
- Government of Sindh, Pakistan Environment Protection Agency and Japan International Cooperation Agency, 2003 – 2 Cities Investigation of Air and Water Quality: Gujranwala and Faisalabad
- UNDP and ENERCON – Assessment of Current Levels of Fuel Efficiency in Road Transport Sector: Draft Complete Report
- UNIDO, 2000 – Research Paper on Major Environmental Policy Instruments of Pakistan Particularly Those that have the Potential to Offset the Negative Aspects of Industrial Development