

Government of Pakistan
Ministry of Environment

10th Five Year People's Plan 2010-2015

Report of Sub-Group on Pollution Control

(November 2009)

REPORT OF SUB-WORKING GROUP ON POLLUTION CONTROL

1. Background

Planning and Development Division is preparing a 10th Five Year People's Plan 2010-15 involving all sectors of economy including the Environment. In the Environment sector, the plan will focus on issues of water, sanitation, air pollution, waste management, deforestation, energy conservation and climate change. A Working Group on Environment headed by the Secretary, Ministry of Environment has been tasked to prepare the Environment Plan.

The Working Group on Environment held several meetings and constituted six thematic Sub-Groups including a Sub-Working Group (SWG) on Pollution Control (SWG-PC).

This report has been prepared by the SWG-PC. The Composition of the SWG is given at **Annex- I** and the Terms of Reference are given below:

- Carryout a broad overview of State of Environment
- Devise the guidelines to effectively prevent and suggest remedial measures to control environment pollution of industry, transport and other emitting sources
- Review environmental aspects as per NEQS
- Suggest institutional measures for Strategic Environmental Assessment for integration of environmental considerations into development plan and to ensure public private partnership
- Recommend measures to enhance capacity and strengthen environmental institutions

2. Introduction

Pakistan is a country of 160 million people with a total area of 770,875 sq km. The average population density is 226 persons per sq km, which is higher as compared to many other developing countries. Its 36% people live in urban areas and 64% in rural (2008). The country has very high rate of migration to urban centers i.e. 3% per annum (2005-10 est.), which has made the cities very congested. A bulk of about 51 million

people lives in 147 major cities making Pakistan the most urbanized country in South Asia. This rapid urbanization has put civic infrastructure under extreme pressure and also caused environmental problems such as air & water pollution, mismanagement of solid waste and destruction of fragile ecosystems. According to the World Bank Report on Environment degradation in Pakistan, environmental degradation impacting the economy by 6% of its GDP, but this loss to the economy is not accounted for in the financial books. The environment sector is not recognized as an economic sector or part of the social sector.

3. State of Environment

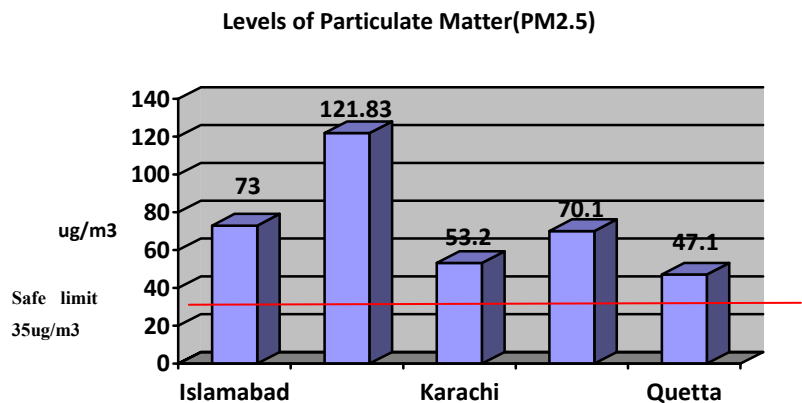
3.1 Air Quality

Issues

Several studies carried out by EPAs and the air quality data recorded by continuous monitoring stations in 5 capital cities confirmed presence of high concentration of suspended particulate matter. The level of PM_{2.5} (particulate matter size below 2.5 micron), which is mainly due to combustion sources, has reached to an alarming point (2-3.5 times higher than the safe limit). Table 1 below shows pollutant levels of one year average :

Table 1 :Average Suspended Particulate Matter (PM2.5)

	City	Level ug/m3
1.	Islamabad	73
2.	Lahore	121.83
3.	Karachi	53.20
4.	Peshawar	70.10
5.	Quetta	47.1
	Safe Limit	35.0



The levels of gases like Carbon Monoxide (CO), Sulphur Dioxide (SO₂), Ozone (O₃) and Hydrocarbon (HC) are still within safe limits though some pockets of high concentration are found in congested places, which give short term exposure to public. Oxides of Nitrogen (NO_x) concentration is continuously increasing in major cities during day time mainly due to increasing number of CNG operated vehicles. Formation of secondary pollutants like sulphates and photo-chemical smog is a very common phenomenon.

Causes

The main causes of air pollution are abrupt increase in number of vehicles and inefficient automotive technology, use of unclean fuels, uncontrolled emission of industrial units, emission of brick kilns, burning of garbage and presence of loose dust. The issue of transboundary pollution from city to city and from across the borders has also been observed.

Looking at the statistics, the number of vehicles on the road has shown a sharp increase over time. In 1980 there were only 0.682 million vehicles on road, which rose to 9.43 million in 2008 and with this growth rate the number will increase to 13.127 million by the year 2015. Fuels containing high sulphur contents and out of date engine technology increased pollution levels in the cities.

At present, only commercial vehicles are visually checked by the Motor Vehicle Examiner (MVE) after every six month. The MVE have no facilities to scientifically check fitness or emission of vehicles. Even passed vehicle cannot give assurance of compliance of standards. No private vehicle undergoes any mandatory inspection/emission check.

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Federal and Provincial EPAs with the assistance of Traffic Police initiate campaign against smoke emitting vehicles and carry out road side testing with the help of equipment. Vehicles complying with emission standards receive "Green Stickers" and those not meeting standards receive "Red Stickers".

Federal EPA adopted a different approach by outreaching public and private organizations and checking vehicles in their own premises. About 41000 vehicles have so far been checked since 2005.

NWFP EPA set up a VETS (Vehicle Emission Testing System) in Peshawar with the assistance of GTZ. The VETS has shown better performance. However, only one VETS, which is located far from the city center, is inadequate to provide services to all vehicles.

Pak-EPA

There are 28 cement plants, 6 fertilizer units, 34 thermal power plants, 76 sugar mills, 173 steel melting & rolling units and countless numbers of brick kilns operating in the country adding suspended particles in the atmosphere in addition to other toxic gases.

Our country has long hot summer and semi arid climate with rainfall ranging from as low as 200 mm in the south to 1200 mm in the north. The wind speed generally remains low; these are favourable factors for the dust particles to remain suspended. The major deserts Thar, Cholistan and Thal are continuously adding dust to the atmosphere that carries with the blowing wind and spreads over vast area in Punjab and Sindh. Some heavy dust storms are also generated from these deserts.

Lack of coordination between ministries and disconnected policies also lead to environmental issues. For instance, import of second hand machinery with disregard to NEQS is one example.

Impacts

According to the World Bank Report, the polluted air is a cause 21,751 premature deaths every year and the increasing number of respiratory diseases (estimated 707 million cases of respiratory symptoms in the country).

Due to formation of smog, haze and dense fog (suspended particulate matter aid formation of fog), visibility in our cities remains very poor and some time situation becomes so critical that air and road travelling has to be suspended which adversely impacts on the national exchequer.

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It is striking that while national estimates are often cited in reports, it is not highlighted enough that the poor in our country will be the ones bearing the biggest burden of the climate and environment related degradation in health, ecology, and farmland. Their livelihoods, more than anyone else, depends on the very land on which they feed their animals and grow their crops. Last year a NASA led international team (under the leadership of V. Ramanathan) found that the persistence of 'brown clouds' over Asia was directly attributing to a loss in rice harvest in India. That is literally next door to Pakistan, and the brown clouds are not much more than ordinary clouds with entrained soot pollution from automotive emissions, home-fires for cooking, and bio-mass burning.

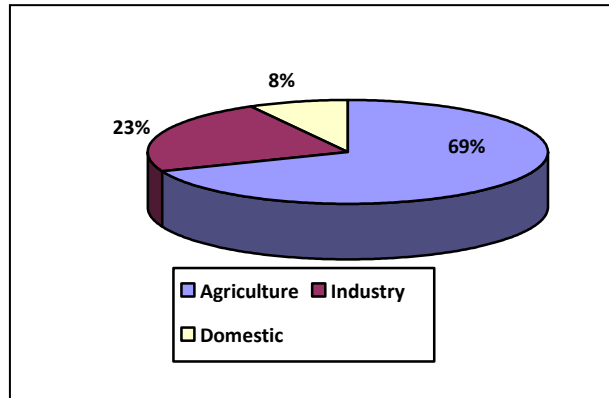
Bilal Zubari

3.2 Water Quality

Issues

Pakistan's total water consumption is 115 MAF with a short fall of 11 MAF (2004). The consumption in domestic, industrial and agriculture sector is shown below as percentage of total use (WWF):

Agriculture	69%
Industry	23%
Domestic uses	8%



After use, the remaining water becomes "wastewater" containing all kinds of toxic chemicals and biological contaminants. Municipal sewage is a major source of pollution. About 2 million wet tons of human excreta are annually produced in the urban sector of which around 50% goes into water bodies to pollute them (WWF). About 70% of biological load is generated by textile and beverage industry (Compendium of Statistic 2004).

National Conservation Strategy (NCS) indicated that almost 40% of deaths were related to water borne diseases. Untreated wastewater from industries further aggravates the situation. About 8% of the total wastewater is treated and rest of the quantity is discharged untreated into different surface water resources like canals, rivers, lakes and sea. Because of this situation, out of 5 rivers (Sindh, Ravi, Chenab, Kabul and Swat), only two rivers Sindh and Jhelum have better water quality while rest have high biological load than the acceptable standards.

Only three cities Karachi (2), Faisalabad (1) and Peshawar (1) have treatment plants but they are under capacity and do not meet NEQS. Recently, CDA has installed a modern wastewater treatment plant (17 MGD) in Islamabad which comply with the NEQS.

Industry in Pakistan having potential of wastewater discharges mostly comprise of textile, tannery, paper and pulp. According to an estimate, about 9000 million gallons of wastewater having 20,000 tons of BOD5 loading are daily discharged into water bodies

in Punjab from the industrial sector (Punjab- EPA). About 80 MGD untreated wastewater is being discharged into Karachi coast. Some treatment plants have been installed by the industries (about 133 in Punjab, 207 in Sindh and 2 in NWFP). EPAs are randomly checking pollution levels of industry and municipal waste and filing cases in the Environmental Protection Tribunals.

Causes

Water is not considered as “precious commodity” in our country as minimal water charges are levied on the treated domestic water or on agricultural water. There is no restriction on extraction of ground water for any purposes. Under this scenario conservation of water or protection of water resources does not get importance. Same is the case with treatment of sewage and industrial toxic waste. Weak enforcement of NEQS, lack of cost effective indigenous technology and resource constraint are the predominating factors of not treating wastewater. The most important element is the lack of political will and disinterest of municipal authorities to address this issue.

Some Water and Sanitation Agencies (WASAs) have planned a few treatment plants for Rawalpindi, Lahore, Faisalabad and Multan with the assistance of Asian Development Bank but the projects financing has not yet been made available. Treatment of sewage and utilizing treated water for agriculture purposes could be a good option for agriculture country like Pakistan.

Another constraint is non-availability of locally manufactured cost effective pollution control technologies. Though the engineering industry is capable of manufacturing wastewater treatment plants but there is no leading agency to coordinate.

Impacts

Since the untreated wastewater is discharged into the rivers and other water bodies, the quality of water resources has been degraded. People living downstream of rivers, particularly in lower Punjab and Sindh, who have no other means, use this water for drinking. According to the WHO report about 25-30% of all hospital admissions are connected to water borne bacterial and parasitic conditions, with 60% of infant deaths caused by water infections. The long-term effects on human health of pesticides and other pollutants include colon and bladder cancer, miscarriage, birth defects,

deformation of bones and sterility. Due to low oxygen in river waters, fish catch has also decreased adversely affecting livelihood of people.

3.3 Solid Waste Management

Issues

Proper solid waste management has never been practiced in any city of the country. No proper land fill or other disposal infrastructure is available in the to manage 50 million tons of waste generated per day. Only 53% of this waste is collected and rest of it is left over due to inadequate infrastructure. Even the collected waste is dumped on open spaces and low lying areas, along the railway track and in the water bodies. The toxic leachate produced by disintegration of waste seeps into the aquifer and pollutes water. In most of the cases, the waste is burnt to reduce its volume and enhance the life span of the dumpsite. However, refuse does not burn well and smoldering dumps produce clouds of smoke that can be seen from miles away, smell bad, and create a breeding ground for flies and rats. The result is unsightly and unsanitary conditions.

Littering is a common habit perhaps due to illiteracy and disregard to environment. One can see markets, streets, and public places with scattered cigarette butts, peelings of fruits and nuts, plastic bags and wrappers. There is no explicit law in the country to prohibit or discourage littering on public places.

Hospitals generate about 250,000 tons of waste per annum which contains about 20% infectious waste. Majority of hospitals do not have facility of incineration or other treatment facilities. The Government has notified Hospital Waste Rules but they are not being implemented in true letter and spirit.

Causes

High migration rate (3% per annum) from rural to urban centers has put tremendous pressure on municipal services. Increased urban population has failed solid waste management in cities due to under capacity infrastructure. City district governments have limited budgets so they cannot enhance their capacity or build infrastructure for proper disposal of waste. Investment from private sector is necessary to support

provincial and city governments to go into joint ventures with local and foreign investors to improve collection and disposal of solid waste.

Impacts

The most serious problem of improper disposal of solid waste is groundwater contamination. As water percolates through solid waste, it makes a leachate that consists of decomposing organic matter combined with iron, mercury, lead, zinc, and other metals from rusting cans, discarded batteries and appliances. It may also contain paints, pesticides, cleaning fluids, newspaper inks, and other chemicals. Contaminated water can have a serious impact on all living creatures, including humans in an ecosystem (WWF).

4. Regulatory Institutions

The environmental regulatory institutions viz. Federal EPA and Provincial EPAs were created with meager staff and financial resources. Some efforts were made in the past to inject technical staff mostly through development projects for a specific period but their sustainability could not be maintained. As such the EPAs' enforcement capacity is almost non-existence.

After enactment of PEPA 1997, Ministry of Environment delegated powers and functions of the Federal Agency to the provincial governments, unconditionally and without considering the implementation capacity of institutions with the intention that the respective governments will strengthen EPAs to enforce the Act. But the expected results to improve the state of the environment could not be achieved after 12 years of the PEPA 1997 due to weak EPAs. There is essential need to build partnerships between federal & provincial governments municipal authorities and industrial associations clearly setting targets and defining responsibilities for improving the environment. The Federal and provincial governments must also show political will to strengthen regulatory institutions (EPAs) to enable them to play their statutory role.

5. Response of Federal and Provincial Government

The federal and provincial governments have taken a number of initiatives to bring down pollution levels during 2005-10. These include:

- Established continuous air quality monitoring system in federal and provincial capitals and upgrading EPAs laboratories
- Notified adoption of EURO-II standards (Pak-II Emission Standards) for new vehicle effective from 1st July 2009 for petrol vehicles and 1st July 2012 for diesel vehicles
- Ministry of Environment & Ministry of Petroleum & Natural Resources initiated Clean Fuel Program in 1995. During 2005-2010, the pace of conversion accelerated and now Pakistan has a fleet of 2 million CNG vehicles (21% of total) and 3100 CNG filling stations, the second largest in the world.
- EPAs carried out environmental monitoring of industrial units and filed 726 cases in the Environment Protection Tribunals.
- Reviewed 1321 EIAs/IEEs of development projects by the Federal and Provincial EPAs.
- Checked 41000 vehicles in Islamabad and similar efforts were made by the provincial EPAs
- Carried out monitoring of water bodies (River Ravi, River Swat, Rawal Lake, Simly Dam, Khanpur Dam, Filtration Plants)
- MOE is executing CNG buses with the public and private partnership, which will replace the existing fleet of old diesel buses.
- The fuel quality has been improved by reducing sulphur from 1% to 0.6 % and will further be cut down to 0.05% by year 2012.
- The Ministry of Environment has drafted legislation on “Prohibition of Manufacturing, Use, and Sale of Non-degradable Plastic Bags” and introducing Oxo-biodegradable plastic bags

6. Mid-term Development Framework (MTDF)

In 2004, the Government announced a five year plan “Mid Term Development Framework (MTDF) 2005-2010” at a total financial layout of Rs. 28.3 billion in the environment sector. An allocation of Rs. 19.0 was made during the last four years of which only 60% funds could be utilized. Because of the low utilization, the MTDF could not show visible improvement in the environment sector. The SWG-PC critically considered the circumstances and constraints for low utilization before proposing 10th Five Year Plan. The Group observed that the following factors were responsible for low utilization:

- Lack of capability of institutions to make PC-Is of Projects and no funds for outsourcing this task
- Late releases of project funds
- Paucity of funds
- No monitoring of MTDF progress

7. People’s Plan 2010-2015.

7.1 Approach

The SWG-PC held two consultative meetings, exchanged useful technical information and proposed a number of Programs and projects for 2010-15. During deliberations, the Group developed the following consensus, which set principles for devising the People’s Plan 2010-2015:

- Environmental improvement may be recognized as one of the economic activities keeping in view the quantum of Environmental Damage (Rs. 365 billion per year) as burden on the national economy.
- Environmental Policy should be translated into on -ground actions.
- Program based approach be adopted which may include action, activities and projects.
- Strong coordination needed for Public Private Partnership projects

- Outsourcing of monitoring task to private sector, NGOs and education institutions, as EPAs with present strength cannot effectively perform this task.
- Donor assistance may be secured only within the framework of People`s Plan.

7.1 Role of Institutions

The SG-PC observed that the role of sponsoring and executing institutions should be clearly spelled out for effective implementation of the 10th Five Year Plan. The following is the suggested role of institutions:

a) M/o Environment

M/o Environment is responsible for improving environment in the country. All policy and guidance therefore flow from it to the Federal and Provincial EPAs. The M/o Environment may assume responsibility of the following to support implementation of People`s Plan (2010-2015):

- Give clear policy direction to the provinces for taking strict regulatory measures and clean up areas under high pollution distress.
- Manage resources from national and international sources to fund projects of national environmental impacts.
- Interact with Board of Investment, local and foreign investors to promote investment in pollution control projects.
- Identify successful models of pollution control in different countries and assist institution in replicating them according to local conditions
- Inject more technical staff in Federal EPA and ensure sustainability of human resources already trained by Federal and Provincial EPAs under different projects.

b) Federal EPA

The role and responsibilities of Federal EPA in implementation of the pollution control programs under People`s Plan 2010-2015 will be important. Coordination with provincial

EPAs and other agencies needs to be enhanced for which Federal EPA can play a vital role. The major functions are proposed below:

- Fix Federal Environmental Targets to be implemented in 2010-2015 and coordinate with provincial EPAs and other institutions for their achievement.
- Facilitate and monitor progress of implementation of the Pollution Control Programs and achievement of targets and quarterly report to M/o Environment.
- Assist provincial EPAs and other concerned organizations to develop project proposals (PC-Is).
- Establish guidelines for monitoring of industrial pollution control in different industrial sectors.
- Coordinate with Federal and Provincial, department and industries to promote and establish environmental engineering industry in the country and setup a system for identification, demonstration and, verification of pollution control technologies.

c) Role of Provincial EPA

The provincial EPAs will perform the following functions in implementation of the Five Year Plan:

- Implement Pollution Control Programs and coordinate with other concerned provincial organizations involved in implementation of pollution control projects.
- Keep close liaison with Federal EPA and furnish quarterly progress report on implementation of pollution control programs and achievement of Federal Environment Targets.
- Facilitate public private partnership for pollution control projects and coordinate with provincial agencies for their implementation.

7.2 Improvement in Air Quality

The following approach will be adopted to control vehicular emissions in the country:

Enforcement of Euro-II Emission Standards for New Vehicles

Ministry of Environment in consultation with vehicles manufacturers and Ministry of Industry has notified adoption of Euro-II Emission Standards (Pak-II) effective from 1st

July, 2009 for petrol vehicles and 1st July 2012 for diesel vehicles . Ministry of Environment will ensure compliance of Pak-II Emission Standards.

Fuel Re-formulation (unleaded and low sulphur) Ministry of Petroleum and Ministry of Environment jointly developed a program on clean fuels in 1995. In the first instant unleaded gasoline was introduced throughout the country. Later, the sulphur contents in diesel oil were reduced from 1% to 0.6%. Further reduction in sulphur content requires heavy investment to install desulphurization plants in refineries. Ministry of Petroleum will be pursued to make available Euro-II compliant sulphur diesel (0.05%) by year 2012.

a) **Promotion of CNG and LPG in Vehicles**

The Federal Government provided subsidy and concessionary tariff regime to promote use of CNG in the country. At present more than 2 million vehicles are operating on CNG and about 3100 CNG stations have been set up in the private sector. Keeping in view the shortage of CNG, the Ministry of Petroleum will be pursued to encourage use of LPG in vehicles and dual fuel (**Diesel+ LPG** and **Diesel+ CNG**) in in-use and new diesel vehicles.

b) **Setting Up Vehicle Inspection/Emission Testing System**

The Motor Vehicle Examination and Emission Testing Centers (MVE&ETC) will be established in the country in collaboration of Motor

BOX

NWFP in 1998 established Vehicular Emission Testing Station (VETS) under the administrative control of EPA. In this programme staff of EPA/VETS along with traffic police used to check the vehicles on road for compliance of the NEQS. However the violators would be fined by the traffic police under the traffic rules 1969. An effort was made by arranging seminars for all environmental magistrates in the province to chalk out implementation of the standards for vehicular emission as per requirement of the Pakistan Environmental Protection Act, 1997.

Another aspect is institutional arrangement for implementation of the vehicular emission standards. has now been transferred to newly crated transport department. The transport department and traffic police are now checking the vehicles for environmental standards but penalizing the same under motor vehicle rules 1969.

Vehicle Examiner, Motor Vehicle Registration and Environmental Protection Agencies. Each MVE&ETC will comprise of 3-4 lane testing facilities. All motor vehicles categories viz. commercial and private will be periodically tested for fitness and emission. Two and three wheelers , which comprise the largest number of vehicles in the cities, will also be included for more stringent tests. Inspection of buses and trucks will require more rigorous inspection and frequent inspection drills. After the vehicle is passed it will become responsibility of owner to keep it in the condition when it passed the inspection.

To summarized, the above approach Pakistan Clean Air Program will be implemented focusing on the following:

- Improving fuel quality
- Implementation of Euro-II Standards
- Introduction of CNG Buses
- Promotion of Dual Fuel injection technology in existing diesel vehicles (LPG+ Diesel and CNG+ Diesel)
- Encouraging establishment of vehicle inspection/emission testing centers in private sector (Isb: 2; LHR: 4; KHI: 6
PWR: 2; QTA: 1
- Checking roadside vehicles and in institutions (ISB: 50,000; Punjab: 200,000; Sindh: 250,000; PWR: 25,000; QTA: 10,000)
- Urban plantation in 10 cities
- Establishment of 6 Air monitoring Stations in ISB: 1; KHI: 2; LHR: 2, PWR:1

f) Increasing Urban Plantation

The green cover in cities will be increased through urban plantation. The city administration will be responsible to plant trees in the open spaces and along the internal roads.

7.3 Municipal Sewage / Industrial wastewater Treatment Plants

Pakistan is becoming water scarce country due to increasing population, lack of conservation approach and non-development of water reservoirs. Under this scenario,

treatment of wastewater and using it for agriculture purposes is very convincing. Pakistan has good potential of manufacturing sewage/wastewater treatment plant locally. The main constraint is designing of treatment the processes and detailed design. Under the People`s Plan 2010-2015, efforts will be made to fill up this gap by promoting tri-partite Public Private Partnership among Government, local engineering industry and foreign companies. This will substantially reduce cost of treatment.

Pakistan has about 76,000 industrial units of different categories. The Government established the NEQS in 1993 but industries are reluctant to invest in wastewater treatment plants. Majority of the industrial units have no arrangements for treatment of their effluent. Out of 20 industrial estates country only two industrial estates (Korangi and Kasur) have common wastewater treatment plants. The third one is under construction in Sunder Industrial Estate. These treatment plants can treat only a fraction of the total wastewater of the industrial sector. Private public partnership could be a good option to promote indigenous manufacturing of pollution control technology for which conducive environment has to be created. In the current unfavorable economic situation low industrial output and liquidity issue with the local financial institutions, the existing engineering industry could establish joint venture with the international firms to manufacture pollution control technology for local and export purposes.

A Wastewater Treatment Program will be initiated in collaboration with the provincial governments. The following actions will be taken under this program:

- Each EPA will strengthen its Environment Monitoring Team and will fully utilize monitoring facilities provided under EMS project
- Encourage establishment of Cleaner Production centers in public and private sector
- Wastewater/sewage treatment plants will be established with Public Private Partnership
- Environmental Engineering Industry will be established in coordination with civil, mechanical and electrical industry
- Self-monitoring Program by industry will be expanded and dialog with industry on compliance of NEQS will be initiated.

7.4 Fresh Water Protection and Surveillance

Limited and depleting water resources of the country require effective protection and surveillance system. EPAs watchdog role must be enhanced and they should work proactively to check pollution sources and take regulatory measures against the polluters. Media, NGOs and educational institutions need to be involved in the surveillance of water resources.

7.5 Hazardous Substance and Waste Management

Industrial chemicals/waste, hospitals waste and obsolete pesticides stocks are main potential sources of hazardous wastes in the country. A regulatory regime will be developed based on "Polluters Pay Principle". However, technology know-how, technology options, source of information about suppliers (local, regional & international) should be conveniently accessible, as a key responsibility of the Provincial governments. Priority importance will be given to category "A" industries of Self-monitoring and reporting/SMART program.

Mostly, substantial quantum of hazardous industrial waste is released by non-formal industrial sector/SME. Inventories of these will be developed at "District Level" by the District Local/Provincial governments, followed by a strategy for pollution control measures for the informal sector industry. The following well recognized approach will be adopted in dealing with the hazardous waste management:

- (i) Recycling
- (ii) Waste Exchange
- (iii) Waste Minimization

Keeping the above approach in mind, the following actions and program will be implemented:

- Strengthening institutional capacities in hazardous waste management
- Development of a Hazardous Waste Management Plan for an environmentally sound management of hazardous wastes including the prevention and

minimization of hazardous waste and illegal international traffic in hazardous wastes

- Creation of Advisory Service Unit for establishment of integrated system for management of chemicals and hazardous wastes in collaboration with NGOs.
- Policy focus will be shifted to support waste reduction at source, waste reuse, recycling and waste composting;
- More training programs will be developed and launched in health care units across the country for sanitary and paramedical staff in safe and environmentally sound handling, transportation and storage of hazardous chemicals, contaminated equipment and health care wastes;
- Manufacturers will be made obliged to take the responsibility for environmental and health impacts caused at all stages of their products life cycle, including wastes by introducing a policy of an Extended Producer Responsibility or Producer Take Back policy, based on Polluter Pay Principle;
- The on-going program of self-monitoring and reporting (SMART) to assist the industry to draw and implement their environmental improvement plan need to be strengthened, made mandatory for high risk sectors, with strong support for its effective and wider implementation across the country;
- Industrial, hazardous and hospital wastes. Develop and enforce regulations to reduce the risk of contamination from underground storage tanks.
- Institutions of “Round Tables” with representatives of all stakeholders and “Thematic Experts Groups” in Provinces, will be set up for action areas as envisaged in national action/implementation plans for managing hazardous chemicals, industrial wastes and contaminated sites.

7.6 Solid Waste Management

Improper collection, storage, disposal and lack of management plan in Pakistan are the most significant issues related to waste management. Some progress has been made during recent years through collaborative initiatives between public and private sectors but much more is required to be done for the uplift of society in order to achieve environmental protection and conservation.

Municipal Solid Waste (MSW) is generally placed in the open or in neighborhoods, without proper collection by the civic agencies. Even if the waste is collected by civic agencies, it is spread along the roadside or dumped in low lying areas.

The complexity of the problem and its magnitude therefore necessitates the formulation of a comprehensive strategy, with the following salient features:

- Public education and awareness regarding various aspects of solid waste.
- Model integrated SWM system in provinces (at least one city in a province) may be set up which could be replicated in other cities with public private partnership.
- Encourage investment through Public-Private partnership in solid waste management projects including landfills, composting and waste to energy projects.
- R & D work for exploring the use of local microorganisms in MSW treatment, composting and Waste-to-Energy-Conversion may be encouraged. Cost effective treatments suitable in local environment may be identified.
- Implementation of Hospital Waste Management Rules, 2005

7.7 Promotion of EIA

Environmental Impact Assessment (EIA) is one of the effective tools to promote sustainable development in the country. Pakistan is a developing country where projects of different nature could irreversibly damage the environment. Although a system of EIA has been introduced in the country but this system needs to be streamlined by enhancing technical expertise in EPAs. Involvement of civil society and educational institutions is imperative. In the People's Plan, promotion of EIA program will address the following issues:

- Insufficient allocation of funds for review of EIA
- Non availability of baseline data
- Lack of experience of EIA consultants
- Insufficient involvement of affectees and regulators during scoping
- No use of quantitative impact assessment methods
- No formal consideration of project alternatives

- Subjective and quantitative nature of EIA review criteria
- No independent EIA review body

7.8 Enhancing Role of Civil Society/Educational Institutions

Pakistan's civil society educational institutions are not working closely with the government institutions and adequately performing its advocacy role. On the other hand, government institutions are also hesitant to involve civil society in monitoring and execution of the projects. The role of civil society will be enhanced in making policies and plans under the People's Plan 2010-2015.

8. Programs/ Project

The SWG on Pollution Control suggests program approach in the above thematic areas instead of individual projects. The program approach will include projects, policy measures, actions, coordination, activities, and awareness. The Ministry of Environment, provincial departments of Environment and EPAs will take leading role and synthesize concerned organizations in the public and private sector to make visible improvement in the thematic areas viz. strengthening of regulatory institutions; bringing air pollution levels down; enhancing percentage of treatment of wastewater/recycling; proper disposal of solid waste; managing hazardous substances and wastes; and involving civil society and educational institutions in the environmental improvement programs. More proactive and focused efforts will be required to attract private sector for environment projects by using PPP. For this purpose Ministry of Environment will assume leading role in bringing private and public sector organizations together. To achieve these objectives, a target oriented Plan 2010-2015 has been devised (**Annex-II**) incorporating the following eight programs:

- i) Pakistan Clean Air Program (PCAP);
- ii) Wastewater Treatment Program (WTP);
- iii) Fresh Water Protection and Surveillance Program (FWP&SP)
- iv) Solid Waste Management Program (SMP);
- v) Hazardous Waste management Program (HWMP);
- vi) EIA Promotion Program (EPP);
- vii) Institutional Strengthening Program (ISP); and
- viii) Awareness Raising Program (ARP)

A financial layout of Rs. 28343.05 million spread over five years has been estimated to implement the pollution control programs and some individual projects. It has been envisaged that the Federal Government will make a share of Rs. 10234.25 million (36.1 %), the provincial governments Rs. 2787.80 million (9.8%), Private sector Rs. 13951.00 (49.2%) and donors assistance Rs. 1390.00 million (4.9 %). The detail of programs and projects is given in **Annex- III**. A summary of the investment layout is given below:

Program-wise Investment

Pollution Control

S.No.	Sector	Total Investment	Federal	Prov.	Private	Donor
1.	Pakistan Clean Air Program (PCAP)	7440.00	3892.00	1102.00	1596.00	850.00
2.	Fresh Water Protection and Surveillance Program (FWP&SP)	12950.00	3108.00	777.00	9065.00	0.00
3.	Solid Waste Management Program (SMP)	4100.00	1040.00	260.00	2800.00	0.00
4.	Hazardous Waste management Program (HWMP)	700.00	168.00	42.00	490.00	0.00
	EIA Promotion Program(EPP)	20.00	20.00	-	-	
5.	Institutional Strengthening Program (ISP)	1349.60	1064.60	265.00	-	20.00
6.	Awareness Raising Program (ARP)	705.00	565.00	140.00	0.00	0.00
7.	Studies	178.45	156.65	21.80	-	-
8.	Energy Conservation	100.00	80.00	20.00	-	-
9.	Marine Pollution	700.00	80.00	140.00	-	500.00
10.	Drinking Water	100.00	80.00	20.00	-	-
	Total	28343.05	10234.25 (36.1%)	2787.80 (9.8%)	13951.00 (49.2%)	1390.00 (4.9%)

The detail of phasing of the financial layout is given in **Annex-IV**.

10th Five Year People's Program 2010-2015
Composition of Sub-Working Group on Pollution Control

1. Director General Pakistan Environmental Protection Agency	Chairman
2. Director General Punjab Environmental Protection Agency	Member
3. Director General Sindh Environmental Protection Agency	Member
4. Director General NWFP Environmental Protection Agency	Member
5. Director General Balochistan Environmental Protection Agency	Member
6. Director General AJK Environmental Protection Agency	Member
7. Director GB Environmental Protection Agency	Member
8. Representative SDPI	Member
9. Representative FPCCI	Member
10. Representative NUST	Manager
11. Dr. Khalida Khan, Punjab University	Member
12. Dr. Naeem Murtaza, Consultant	Member
13. Dr. Javed Iqbal, MD WASA, Lahore	Expert
14. Dr. Murtaza Malik, UNICEF	Expert
15. Mr. Irfan Saeed Alrai	Expert
16. Mr. Zia Ul Islam	Member/Secretary

Tenth Five Years People Program 2010-15

Pollution Control

S. No.	Indicators	Existing	Target 2015	Responsibility	Actions
Pakistan Clean Air Program					
1.	Suspended Particulate Matter PM2.5 reduced	Islamabad: 72 ug/m3 Lahore: 122 Karachi: 53 Peshawar: 79 Quetta: 47	Islamabad: 60 ug/m3 Lahore: 80 Karachi: 40 Peshawar: 60 Quetta: 40	Pak-EPA and Provincial EPA Department of Transport, Traffic Police Forest Departments	<ul style="list-style-type: none"> i. Phasing out of sulphur in diesel ii. Implementation of Euro-II Standards iii. Introduction of CNG Buses iv. Promotion of Dual Fuel injection technology in existing diesel vehicles(LPG+ Diesel and CNG+Diesel) v. Encouraging establishment of vehicle inspection/emission testing centers in private sector (Isb: 2; Punjab;36; Sindh: 10; NWFP: 2; Balochistan: 2 vi. Checking roadside vehicles and in institutions (ISB: 50,000; Punjab: 200,000; Sindh: 250,000; PWR: 25,000; QTA: 10,000) vii. Urban plantation in 10 cities viii. Establishment of 6 Air monitoring

					Stations in ISB: 1; KHI: 2; LHR: 2, PWR:1
2.	Noise in 5 major cities reduced	Noise level: Islamabad: 59-85 dB Lahore: 53-95 Karachi: 61-99 Peshawar: 56-92 Quetta: 50-86	Noise levels will be reduced by 25 %	Pak-EPA, Prov. EPA	<ul style="list-style-type: none"> i. Notify National Noise Standards and legal action against violators ii. Installation of noise monitoring stations at different locations in cities iii. Noise Reduction Campaigns in cities targeting construction, traffic, loud speakers and industrial noise iv. Monitoring of Silence Zones v. Improving local silencer design vi. Stopping local manufacturing of pressure and multi-tune horns
Waste Water Treatment Program					
3.	Monitoring of Industrial Units enhanced	No target set	Pak-EPA: 300 Punjab EPA: 1500 Sindh EPA: 2000 NWFP PA: 300 Baluchistan EPA: 50 AJK EPA 50	Pak-EPA and Provincial EPA	<ul style="list-style-type: none"> i. Each EPA will strengthen its Environment Monitoring Team and will fully utilize monitoring facilities provided under EMS project ii. Encourage establishment of Cleaner Production centers in public and private sector

4.	Self-monitoring by Industry program expanded	No. of industrial units: 114 Pak-EPA: 2 Punjab EPA: 45 Sindh EPA: 55 NWFP PA: 8 Baluchistan EPA: 4	No. of industrial units: 2075 Pak-EPA: 50 Punjab EPA: 1000 Sindh EPA: 800 NWFP PA: 200 Baluchistan EPA: 25	Pak-EPA and Provincial PA E	Self-monitoring Program by industry will be expanded and dialog with industry on compliance of NEQS will be initiated.
5.	i. Increased Wastewater Treatment Plants in Industry ii. Increased Wastewater Treatment Plants in Industrial Estates	Islamabad: 01 Punjab: 133 Sindh: 207 NWFP: 02 Balochistan: 01 WWTP in Industrial Estates: Punjab: 01 Sindh: 01 NWFP: 01	Islamabad: 04 Punjab: 50 Sindh: 50 NWFP: 10 Balochistan: 01 WWTP in Industrial Estates: Punjab: 04 Sindh: 02 NWFP: 01	Industrial Estates	Wastewater/sewage treatment plants will be established with Public Private Partnership
6.	Environment Engineering Industry Established	Environmental Engineering Industry is fragmented	Environmental Engineering Industry will be formally established	Industry Department, Environment Department, Civil Contractors, mech. & elect. manufactures	Environmental Engineering Industry will be established in coordination with civil, mechanical and electrical industry. A directory of Environmental Engineering Industry will be published

Fresh Water Protection and Surveillance Program					
7.	Quality of Lakes and Ponds water checked and categorized	No regular monitoring is carried out	Establish database of water quality and categorized water (agriculture water, Fishable water, drinkable water etc.)	District Governments, Tehsil Municipal Administration, EPAs,	Carryout survey of all lakes and ponds and categorize them for drinking, fishing, irrigation or prohibited for any use
8.	Quality of Canal waters Checked and regulatory measures taken to protect them	No survey carried out	Survey of all 45 major canals to establish baseline of water quality	Irrigation Department, City Distt. Govt. Industrial Associations, Provincial EPAs	Carryout survey of all canals and cases will be registered against those dumping untreated waste into canals
9.	River Waters Quality improved	<p style="text-align: center;"><u>BOD mg/l</u></p> River Ravi 9.0 River Swat 12.0	<p style="text-align: center;"><u>BOD mg/l</u></p> River Ravi 4.0 River Swat 4.0	MOE, Prov. EPA, WASAs	i. Implementation of Ravi Clean-up program ii. Implementation of Swat Clean-up Program iii. Annual monitoring of Rivers
10.	Harbor and coastal water Quality improved	D.O: 5.0 BOD: 82-200 NH ₃ : 100-1000	D.O: 9.0 BOD: <20 NH ₃ : 60	MOE, MOP&S; Local Govts., City Distt. Govts., WASA, KPT, DHA, SEPA	i. Beach Cleaning Program ii. Monitoring/action against industrial units dumping untreated waste in Lyari, Malir or directly dumping into sea iii. Implementation of S-III program by CDGK

Solid Waste Management Program					
11.	Solid Waste Management in Cities established	Landfill/composting/WTE plants: Islamabad: 0 Punjab : 1 Sindh: 0 NWFP: 0 Balochistan: 0	Landfill/composting/WTE plants: Islamabad: 1 Punjab: 4 Sindh: 4 NWFP: 2 Balochistan 1	MOE, CDA, ICT, Local Govts., City Distt. Govts.,	i. Public education and awareness regarding various aspects of solid waste. ii. Model integrated SWM system in provinces (at least one city in a province) may be set up which could be replicated in other cities with public private partnership. iii. Encourage investment through Public-Private partnership in solid waste management projects including landfills, composting and waste to energy projects. iv. R & D work for exploring the use of local microorganisms in MSW treatment, composting and Waste-to-Energy-Conversion may be encouraged. Cost effective treatments suitable in local environment may be identified. v. Improving collection efficiency of

					Solid waste through "Time Motion Study" and capacity enhancement
12.	Infectious Hospital Waste incinerated/disposed of properly	Total Generation of Infectious waste: 50,000 tons. A fraction of infectious waste is properly disposed of.	Properly disposed of: 25%	MOH, Prov. Departments of Health, Public & Private hospitals	Implementation of Hospital Waste Management Rules, 2005
13.	Regulatory system for Hazardous substances and Waste in place	i. Non existent	Regulatory system in place with licensing system for chemical handling	Pak-EPA Provincial EPAs	Hazardous waste Rules to be notified Licensing system for transportation, storage and handling of hazardous waste
EIA Promotion Program					
14.	No avoidance of EIA by public and private sector projects	EIA/IEE Processed : 1020	Increased EIA: 30%	P&D Div., PP&DD, Pak-EPA, Prov. EPAs, Proponent of public and Private sector Projects	<ul style="list-style-type: none"> i. Improving communication between EPAs and P&D Div., PPDD, Public and Private sector i. More coordination with NGOs, and media ii. Designating Environmental Focal Points in all Ministries and Departments
15.	Processing time of EIA Reduced	Avg. Environmental Approval time : 270 days	Avg. Environmental Approval time : 90 days	Pak-EPA and Pak-EPA, Provincial EPA, Project proponents	<ul style="list-style-type: none"> EIA application acceptance = 5 days Preliminary deficiency of EIA = 10 days Public hearing notice max.= 15 days Review = 60 days

Institutional Strengthening Program (ISP)					
16.	EPAs Regional Offices established	Punjab EPA has district level offices	District Level Offices of EPA	Prov. Env. Deptts.	Additional positions will be created after carryout need assessment
17.	Optimum Technical Staff in EPAs recruited	Inadequate staff in EPAs	Optimum Staff in EPAs	MOE, Prov. Env. Deptts.	Additional positions will be created after carryout need assessment

10th People's Plan 2010-2015

Financial Layout

Sector	Project	Execution	Total Cost	Investment	Federal	Provincial	Private	Donor
AQ	Establishment of 30 No. Vehicle Inspection/Emission Testing Centers in Eight cities	Federal	2000.00	PPP	400.00	200.00	1400.00	-
AQ	Setting up 10 cleaner Production Center in Pakistan	Federal	100.00	PPP	20.00	10.0	70.00	-
AQ	Fund for Replacement of 2-Stroke Engine of Rickshaws with 4-Stroke (Endowment)	Federal	4000.00	ADP/PSDP	3200	800.00	-	-
AQ	Establishment of Air Quality Monitoring Stations in 5 big cities of Punjab (Faisalabad, Gujranwala, Rawalpindi, Multan, Bahawalpur).	Federal	150.00	ADP/PSDP/Donor	30.00	20.00	-	100
AQ	Urban Tree Plantation	Federal	200.00	PSDP/ADP/Donor	40.00	10.0	-	150.00
AQ	Establishment of 5 Environmental Squad in EPAs	Federal	60.00	PSDP/ADP/Donor	6.0	4.0	-	50.00
AQ	Establishment of Motor Vehicle Inspection Centers in all 36 Districts of Punjab.	Punjab	180.00	PPP	36.00	18.00	126.00	-
AQ	Establishment of Air Quality Monitoring Stations in Sindh	Sindh	500.00	ADP/PSDP/Donor	80.00	20.00	-	400.00
AQ	Provision of 4 Mobile Air	NWFP	200.00	ADP/PSDP/Donor	40.00	10.00	-	150.00

	Monitoring Laboratories for EPA-NWFP							
AQ	Indoor Air Monitoring Programme in Urban and Rural Areas of NWFP	NWFP	50.00	ADP/PSDP	40.0	10.0	-	-
	Sub Total							
WW	Establishment of 5 wastewater treatment plants in established industrial estates	Federal	3500.00	PPP	840.00	210.00	2450.00	-
WW	Establishment of combined Effluent Treatment Plants at 3 Industrial Clusters (Faislabad, Saikot and Multan)	Punjab	9000.00	PPP	2160.00	540.00	6300.00	-
WW	Construction of Joint Affluent Treatment Facility for Industrial Estates of Mirpur & Bhimber Districts	AJK	450.00	PPP	108.00	27.00	315.00	-
	Sub Total							
SW	Setting up 5 Waste-to-Energy /Landfills in Pakistan	Federal	3000.00	PPP			2100.00	
SW	Launching of Anti-littering Campaign in 10 cities	Federal	100.00	PSDP	80.00	20.00	-	-
SW	Establishment of sanitary landfill sites in 5 big cities of Punjab (Lahore, Faisalabad, Gujranwala, Multan, Bahawalpur)	Punjab	1000.00	PPP	240	60.00	700.00	-
	Sub Total		3200.00		320.00	80.00	2800.00	-

HW	Establishment of Hazardous waste disposal plant in 4 industrial estates	Federal	200.00	PPP	48.00	12.00	140.00	-
HW	Establishment of Incinerators in Industrial sites in Sindh	Sindh	500.00	PPP	120	30.00	350.00	
	Sub Total		700.00		168.00	48.00	490.00	-
IS	Establishment of Green Enforcement Team in EPAs	Federal	30.00	PSDP/ADP/Donor	8.00	2.00	-	20.00
IS	Strengthening of EIA, Monitoring, Enforcement and Public Complaint Sections in EPAs	Federal	200.0	PSDP	160.00	40.00	-	-
IS	Establishment of Pak-EPA Public Information and Publicity Cell	Federal	30.00	PSDP	24.00	6.00	-	-
IS	Project Development Fund	Federal	10.00	PSDP	8.00	2.00	-	-
IS	Capacity Building of EPA Punjab, other Government Departments and NGOs on Environmental Management.	Punjab	200.00	ADP/PSDP	160.00	40.00	-	-
IS	Strengthening of Enforcement Capacity of EPA-NWFP	NWFP	100.00	ADP/PSDP	80.00	20.00	-	-
IS	Establishment of Environmental Lab at Hub Industrial Estate to control Gawadar, Uthal, Pasni, Urmara, Winder & Gaddani Ship Breaking Industry.	Balochistan	1.75	ADP/PSDP	1.75	-	-	-
IS	Construction of Environmental Protection Agency's Regional Office at Loralai.	Balochistan	1.85	ADP/PSDP	1.85	-	-	-

IS	Capacity Building of AJK Environmental Protection Agency for Effective Environmental Monitoring and Governance.	AJK	776.00	ADP/PSDP	621.00	155.00	-	-
	Sub Total		1319.60		1224.60	263.00	-	-
AWR	Existing Practices & Awareness regarding safe use of Pesticides and Fertilizers		100.00	ADP/PSDP	80.00	20.00	-	-
AWR	Creating environmental awareness in schools through supporting material like maps, modules & printing materials		500.00	ADP/PSDP	400.00	100.00	-	-
AWR	Mass Awareness Regarding Environmental Pollution in NWFP	NWFP	100.00	ADP/PSDP	80.00	20.00	-	-
AWR	Awareness raising campaigns regarding the conservation of natural resources and their sustainable management in GB.	GB	5.00	ADP/PSDP	5.00	-	-	-
	Sub Total		705.00		565.00	140.00	-	-
STD	Waste Minimization and Waste Exchange Program	Federal	50.00	PSDP	50.00	-	-	-
STD	Survey & Chemical Analyses of Lasbella Industrial Effluents.	Balochistan	4.00	ADP/PSDP	4.00	-	-	-
STD	Monitoring/Survey of Coastal Belt of Balochistan	Balochistan	19.80	ADP/PSDP	16.00	3.80	-	-

STD	Study on Drinking Water Supply in Major Towns of Balochistan Province	Balochistan	1.85	ADP/PSDP	1.85	-	-	-
STD	Survey & Chemical Analyses of Lasbella Industrial Effluents.	Balochistan	23.00	ADP/PSDP	19.00	4.00	-	-
STD	Survey and Chemical Analysis of Lasbella Industrial Effluents.	Balochistan	1.80	ADP/PSDP	1.80	-	-	-
STD	Action Plan for National Year of Environment.		05.00	ADP/PSDP	4.00	1.00	-	-
STD	Analysis of drinking water quality (chemical & biological) in GB	GB	7.00	ADP/PSDP	6.00	1.00	-	-
STD	Analysis of surface water quality Nullas, wetlands, lakes, springs and rivers of GB.	GB	7.00	ADP/PSDP	6.00	1.00	-	-
STD	Monitoring of violation of Environmental Laws in GB.	GB	5.00	ADP/PSDP	4.00	1.00	-	-
STD	Monitoring of Climate Change and its effects on glaciers, water resources, agriculture and forests in GB	GB	10.00	ADP/PSDP	8.00	2.00	-	-
STD	Analysis of Noise pollution in urban areas of GB		3.00	ADP/PSDP	3.00		-	-
STD	Studies and survey of Municipal Solid Waste Management (Land filling, Incineration and Composting) in GB	GB	20.00	ADP/PSDP	16.00	4.00	-	-
STD	Study and survey for proper Management of Hospital	GB	15.00	ADP/PSDP	12.00	3.00	-	-

	Waste (incineration, secure land filling)							
STD	Monitoring of industrial units and automobile workshops in GB	GB	6.00	ADP/PSDP	5.00	1.00	-	-
	Sub Total		178.45		156.65	21.80	-	-
EC	Switching over lighting System of Recreational Parks of 10 big cities from Conventional Electricity to Solar Energy.	Punjab	100.00	ADP/PSDP	80.00	20.00	-	-
	Sub Total		100.00		80.00	20.00		
MP	Establishment of Marine Pollution Monitoring & Research Stations in Sindh	Sindh	700.00	ADP/PSDP	560.00	140.00	-	-
	Sub Total		700.00		560.00	140.00	-	-
DW	Development of Alternative Drinking Water Sources in Sindh	Sindh	100.00	ADP/PSDP	80.00	20.00	-	-
	Sub Total		100.00		80.00	20.00	-	-
	Grand Total		28323.05		10234.25 (36.1%)	2787.80 (9.8%)	13951.00 (49.2%)	1390.00 (4.9%)

10th Five Year People's Program
Phasing of Financial Estimates
2010-2015

Programme	Project	Estimated Cost	Annual Cost					
			Total	FEC	2010-11	2011-12	2012-13	2013-14
AQ	Establishment of 30 No. Vehicle Inspection/Emission Testing Centers in Eight cities	2000.00	-	300.00	500.00	600.00	400.00	200.00
AQ	Setting up 10 cleaner Production Center in Pakistan	100.00	-	15.00	25.00	30.00	20.00	10.00
AQ	Fund for Replacement of 2-Stroke Engine of Rickshaws with 4-Stroke (Endowment)	4000.00	-	600.00	1000.00	1200.00	800.00	400.00
AQ	Establishment of Air Quality Monitoring Stations in 5 big cities of Punjab (Faisalabad, Gujranwala, Rawalpindi, Multan, Bahawalpur).	150.00	100.00	22.50	37.50	45.00	30.00	15.00
AQ	Urban Tree Plantation	200.00	150.00	30.00	50.00	60.00	40.00	20.00

AQ	Establishment of 5 Environmental Squad in EPAs	60.00	50.00	9.00	15.00	18.00	12.00	6.00
AQ	Establishment of Motor Vehicle Inspection Centers in all 36 Districts of Punjab.	180.00	-	27.00	45.00	54.00	36.00	18.00
AQ	Establishment of Air Quality Monitoring Stations in Sindh	500.00	400.00	75.00	125.00	150.00	100.00	50.00
AQ	Provision of 4 Mobile Air Monitoring Laboratories for EPA-NWFP	200.00	150.00	30.00	50.00	60.00	40.00	20.00
AQ	Indoor Air Monitoring Programme in Urban and Rural Areas of NWFP	50.00	-	7.50	12.50	15.00	10.00	5.00
	Sub Total	7440.00	850.00	1116.00	1860.00	2232.00	1488.00	744.00
WW	Establishment of 5 wastewater treatment plants in established industrial estates	3500.00	-	525.00	875.00	1050.00	700.00	350.00
WW	Establishment of combined Effluent Treatment Plants at 3 Industrial Clusters (Faisalabad, Sialkot and Multan)	9000.00	-	1350.00	2250.00	2700.00	1800.00	900.00
WW	Construction of Joint Affluent Treatment Facility for Industrial Estates of Mirpur & Bhimber Districts	450.00	-	67.50	112.50	135.00	90.00	45.00

	Sub Total	12950.00		1942.50	3237.50	3885.00	2590.00	1295.00
SW	Setting up 5 Waste-to-Energy /Landfills in Pakistan	3000.00		450.00	750.00	900.00	600.00	300.00
SW	Launching of Anti-littering Campaign in 10 cities	100.00	-	15.00	25.00	30.00	20.00	10.00
SW	Establishment of sanitary landfill sites in 5 big cities of Punjab (Lahore, Faisalabad, Gujranwala, Multan, Bahawalpur)	1000.00	-	150.00	250.00	300.00	200.00	100.00
	Sub Total	4100.00	-	615.00	1025.00	1230.00	820.00	410.00
HW	Establishment of Hazardous waste disposal plant in 4 industrial estates	200.00	-	30.00	50.00	60.00	40.00	20.00
HW	Establishment of Incinerators in Industrial sites in Sindh	500.00		75.00	125.00	150.00	100.00	50.00
	Sub Total	700.00	-	105.00	175.00	210.00	140.00	70.00
EPP	EIA			0.15	0.25	0.30	0.20	0.10
	Sub-Total			0.15	0.25	0.30	0.20	0.10
IS	Establishment of Green Enforcement Team in EPAs	30.00	20.00	4.50	7.50	9.00	6.00	3.00

IS	Strengthening Monitoring, EIA, Enforcement, HSW and Public Complaint Sections in EPAs	200.00	-	30.00	50.00	60.00	40.00	20.00
IS	Establishment of Pak-EPA Public Information and Publicity Cell	30.00	-	4.50	7.50	9.00	6.00	3.00
IS	Project Development Fund	10.00	-	1.50	2.50	3.00	2.00	1.00
IS	Capacity Building of EPA Punjab, other Government Departments and NGOs on Environmental Management.	200.00	-	30.00	50.00	60.00	40.00	20.00
IS	Strengthening of Enforcement Capacity of EPA-NWFP	100.00	-	15.00	25.00	30.00	20.00	10.00
IS	Establishment of Environmental Lab at Hub Industrial Estate to control Gawadar, Uthal, Pasni, Urmara, Winder & Gaddani Ship Breaking Industry.	1.75	-	0.26	0.44	0.53	0.35	0.18
IS	Construction of Environmental Protection Agency's Regional Office at Loralai.	1.85	-	0.28	0.46	0.56	0.37	0.19

IS	Capacity Building of AJK Environmental Protection Agency for Effective Environmental Monitoring and Governance.	776.00	-	116.40	194.00	232.80	155.20	77.60
	Sub Total	1349.60	-	202.44	337.40	404.88	269.92	134.96
AWR	Existing Practices & Awareness regarding safe use of Pesticides and Fertilizers	100.00	-	15.00	25.00	30.00	20.00	10.00
AWR	Creating environmental awareness in schools through supporting material like maps, modules & printing materials	500.00	-	75.00	125.00	150.00	100.00	50.00
AWR	Mass Awareness Regarding Environmental Pollution in NWFP	100.00	-	15.00	25.00	30.00	20.00	10.00
AWR	Awareness raising campaigns regarding the conservation of natural resources and their sustainable management in GB.	5.00	-	0.75	1.25	1.50	1.00	0.50
	Sub Total	705.00	20.00	105.75	176.25	211.50	141.00	70.50
STD	Waste Minimization and Waste Exchange Program	50.00	-	7.50	12.50	15.00	10.00	5.00

STD	Survey & Chemical Analyses of Lasbella Industrial Effluents.	4.00	-	0.60	1.00	1.20	0.80	0.40
STD	Monitoring/Survey of Coastal Belt of Balochistan	19.80	-	2.97	4.95	5.94	3.96	1.98
STD	Study on Drinking Water Supply in Major Towns of Balochistan Province	1.85	-	0.28	0.46	0.56	0.37	0.19
STD	Survey & Chemical Analyses of Lasbella Industrial Effluents.	23.00	-	3.45	5.75	6.90	4.60	2.30
STD	Survey and Chemical Analysis of Lasbella Industrial Effluents.	1.80	-	0.27	0.45	0.54	0.36	0.18
STD	Action Plan for National Year of Environment.	5.00	-	0.75	1.25	1.50	1.00	0.50
STD	Analysis of drinking water quality (chemical & biological) in GB	7.00	-	1.05	1.75	2.10	1.40	0.70
STD	Analysis of surface water quality Nullas, wetlands, lakes, springs and rivers of GB.	7.00	-	1.05	1.75	2.10	1.40	0.70

STD	Monitoring of violation of Environmental Laws in GB.	5.00	-	0.75	1.25	1.50	1.00	0.50
STD	Monitoring of Climate Change and its effects on glaciers, water resources, agriculture and forests in GB	10.00	-	1.50	2.50	3.00	2.00	1.00
STD	Analysis of Noise pollution in urban areas of GB	3.00	-	0.45	0.75	0.90	0.60	0.30
STD	Studies and survey of Municipal Solid Waste Management (Land filling, Incineration and Composting) in GB	20.00	-	3.00	5.00	6.00	4.00	2.00
STD	Study and survey for proper Management of Hospital Waste (incineration, secure land filling)	15.00	-	2.25	3.75	4.50	3.00	1.50
STD	Monitoring of industrial units and automobile workshops in GB	6.00	-	0.90	1.50	1.80	1.20	0.60
	Sub Total	178.45	-	26.77	44.61	53.54	35.69	17.85

EC	Switching over lighting System of Recreational Parks of 10 big cities from Conventional Electricity to Solar Energy.	100.00	-	15.00	25.00	30.00	20.00	10.00
	Sub Total	100.00		15.00	25.00	30.00	20.00	10.00
MP	Establishment of Marine Pollution Monitoring & Research Stations in Sindh	700.00	-	105.00	175.00	210.00	140.00	70.00
	Sub Total	700.00		105.00	175.00	210.00	140.00	70.00
DW	Development of Alternative Drinking Water Sources in Sindh	100.00		15.00	25.00	30.00	20.00	10.00
	Sub Total	100.00		15.00	25.00	30.00	20.00	10.00
	Grand Total	28323.05		4248.46	7080.76	8496.92	5664.61	2832.31