

## VII. RECOMMENDATIONS AND A PROPOSED WAY FORWARD

179. The urgency for addressing Pakistan's environmental problems has probably never been greater. Conservative estimates presented in this report suggest that environmental degradation costs the country at least 6 percent of GDP, and these costs fall disproportionately upon the poor. The most significant causes of environmental damage identified and estimated in this report are: (i) inadequate water supply, sanitation and hygiene; (ii) soil degradation; (iii) indoor air pollution; (iv) urban air pollution; and (v) exposure to lead. Whether judged in terms of regional performance or environmental stress factors, there is significant scope to better ensure the sustainability of Pakistan's economic growth.

180. The preceding chapters of this report have examined the current status of environmental management in Pakistan, focusing on three issues: (i) the environmental impact assessment system; (ii) urban air quality management; and (iii) water supply and sanitation. Suggestions for strengthening environmental management in these specific areas are presented in each chapter. Viewing environmental quality as the outcome of an environmental "production function" involving pressures resulting from economic activities mitigated by a series of institutional, regulatory and other incentives, this report identifies the main binding constraints on environmental performance as falling into four categories: (i) gaps in incentives and accountability; (ii) institutional design; (iii) gaps in the regulatory framework; (iv) capacity limitations. Based on the analysis presented in the preceding chapters, the principal features of these constraints are summarized below, followed by a set of recommendations for reducing these barriers to improved environmental quality and more sustainable economic growth. The chapter concludes with a set of recommendations for immediate action.

### 1. Strengthening Linkages in Institutional Design

181. Constitutionally, Federal and provincial governments share the concurrent legislative authority for environmental pollution and ecology. In addition, Pakistan EPA has delegated powers under PEPA to provincial EPAs to implement and enforce environmental regulations. Further, the mid-term review of the NCS and the NEP both emphasize the need to develop the environmental management capacity of provincial and local governments. Appropriate roles for national authorities within this environmental federalist structure include: (i) setting national policy and defining environmental quality goals; (ii) providing resources and oversight to provincial environmental authorities; and (iii) publicly reporting on progress in meeting national environmental objectives. Provincial environmental authorities should play the primary role in the environmental clearance process, the implementation of compliance and enforcement, as well as the monitoring of ambient environmental conditions. At the same time, the Federal environmental authority has a legal mandate to ensure the enforcement of national laws and regulations, which includes Federal oversight and suspension of delegated powers. Bringing greater clarity to this structure would reduce the institutional design constraints to improved environmental outcomes, particularly in the areas highlighted below.

#### *Establishing Guidelines for Oversight of Delegated Authorities*

182. No oversight guidelines have been established for Federal environmental powers delegated to provincial EPAs. In principle, such guidelines should allow for delegation based on (i) the adequacy of provincial regulations to achieve national objectives; (ii) the adequacy of provincial technical expertise, staff, and resources to perform the delegated responsibilities; and

(iii) provincial commitment to share the information needed to monitor compliance and measure performance.

183. Oversight guidelines should also establish policies for funding assistance, dispute resolution, and provide a basis for Federal suspension of delegated authorities when necessary. Such guidelines would facilitate Federal oversight of provincial EIA clearances, for example. Although Pakistan EPA reserves the right to suspend provincial EIA clearance authority, this has never been exercised, in part for lack of clarity of oversight arrangements, limiting the effectiveness of the Federal mandate, and ultimately of the EIA system itself.

### ***Creating Partnerships for Clean Air***

184. MoE is developing the Pakistan Clean Air Programme (PCAP) to consolidate efforts to address the four principal sources of urban air pollution, vehicular and industrial emissions, burning of solid waste, and natural dust. Effective implementation of the program will require the development of partnerships between multiple tiers and sectors of government. While Pakistan EPA is responsible at the national level for setting air quality and emissions standards, and for defining associated systems for monitoring and enforcement, responsibility for the implementation of these policies has been delegated to the provincial environmental authorities. City authorities are particularly important in the management of urban air quality because of the need to integrate emissions control measures with broader aspects of urban planning, such as the provision of public transport and zoning of industrial developments. In establishing policies for clean air, the energy, fuel and transportation sectors will have important roles to play. An essential aspect of PCAP's institutional design, therefore, will be the formation of partnerships and provision of incentives between levels and agencies of government.

### ***Distinguishing Water Supply Roles: Source Protection, Service Provision, and Quality Control***

185. In considering the protection of water quality, it is useful to distinguish between the protection of water sources, the provision of water supply and sanitation services, and the regulation of drinking water quality. Protection of surface and groundwater sources should clearly involve environmental authorities, although irrigation departments also have an important role to play. As part of the devolution process, the provision of water and sanitation services is now assigned to local governments, and should continue to have a strong local dimension. The ideal system for regulation of drinking water quality would be tiered, with local governments or operators conducting routine monitoring, provincial authorities carrying out regular oversight of the local systems, and Federal agencies providing quality assurance, and reporting at the national level on trends and achievements.

## **2. Updating the Regulatory Framework**

186. The current NEQS provide standards for emissions and effluent from selected sources, but do not establish standards for the ambient quality of air or water. In addition, aspects of these standards are out-of-date, no longer reflecting current understanding or technologies. The regulatory framework would be significantly strengthened by linking standards for ambient quality with updated standards for emissions, monitoring, and the provision of public information, particularly in the areas described below.

### ***Developing Health-Based Air Quality Standards***

187. Ambient air quality standards are the foundation upon which emission control strategies are based, usually adopted as enforceable regulations, typically with deadlines and schedules for attainment. Such standards are not simply limits for each pollutant: they also specify monitoring methods, locations and frequencies, averaging times and assessment procedures. Pakistan lacks a comprehensive set of health-based air quality standards. This is partly linked to the lack of information on current conditions, but with the establishment of an air quality monitoring network underway, it would now be appropriate to develop national air quality standards based on a review of the data generated, standards in other countries, and WHO guidelines. While safeguarding public health should be the main consideration, the costs and likelihood of achieving the standards should also be used to inform the standard-setting process.

### ***Vehicle Emission and Fuel Quality Standards***

188. The Vehicle Emission Standards (VES) currently specified in the NEQS are outdated when compared to most other countries. In updating them, the goal should be to set two standards, one for new registration vehicles, and the second for in-service vehicles. Establishment and achievement of VES are intrinsically linked to fuel quality. For example, the current level of sulphur in diesel in Pakistan is too high to be able to meet Euro II or Euro III emission standards, which have already been adopted in some South Asian countries. The cost of moving to lower sulphur diesel needs to be evaluated against the potential economic benefits in terms of lower emissions and better health. Based on the current condition of the vehicle fleet and fuel quality, it would be appropriate to adopt a phased approach to the tightening of VES and fuel standards, developed in consultation with all stakeholders.

### ***Establishing Use-Based Water Quality Standards***

189. The lack of ambient water quality standards is a significant gap in the regulatory system. In this context, the NEP identifies the need to establish a use-based system for classification of water bodies, as a first step in setting objectives for protection and rehabilitation. Approaches used internationally are usually based on the concept of Beneficial Uses of any water body, such as irrigation, fish breeding and capture, drinking water supply, and recreation. Reasonable goals can be set for each stretch of water in terms of such uses, based on current or proposed future activity. Once an understanding of critical uses is established, there is a clear and persuasive basis for regulation of pollution discharges and water abstraction in the light of such goals. While a formal process of agreeing Beneficial Uses for the whole water system would be a long and complex process, it should be possible to reach agreement on certain critical water bodies for short term action. A process of discussion and delegation will be required to agree on federal, provincial, and sectoral roles in setting and enforcing ambient and associated effluent standards.

### ***Drinking Water Quality Standards***

190. One of the top priorities of the NEP is to establish the legal and policy framework for the provision of safe drinking water. MoE should take a lead in developing this framework, with a focus on defining clear roles, including assigning responsibility for the development of drinking water standards. There is an important need to monitor water supply services, in particular the bacteriological and chemical quality of the water as it is received by users. In 2002, the Pakistan Standards and Quality Control Authority (PSQCA) issued a drinking water quality document, in line with WHO guidelines, but this is a guidance document and is not enforceable on water

service providers. Consequently, there are currently no formal drinking water quality standards in Pakistan to protect users, a gap which should be filled as a matter of priority.

### **3. Building Institutional Capacity for Environmental Management**

191. With significant new resources proposed for environmental purposes in the MTFD, funding is less of a constraint than the capacity to apply available resources. The availability of these resources presents an important opportunity to develop capacity in environmental authorities at Federal, provincial and local levels to implement the strengthened regulatory framework described above, as well as to mainstream the development of environmental management capacity in key sectoral agencies, and to upstream such capacity in planning departments. Effective use of these resources will allow these agencies to address a shortage of qualified staff by contracting technical assistance, focusing on:

- the outsourcing of services to monitor environmental quality, as well as to analyze and disseminate the results;
- the development of environmental standards, particularly in priority areas such as the establishment of ambient air and water quality standards;
- expert input for the review of environmental assessments.

192. In the longer term, Provincial Sustainable Development Funds (PSDFs) are potentially valuable vehicles to build provincial and local government environmental management capacity. PSDF rules allow environmental fees and charges to be credited to these funds, not only strengthening incentives for better performance by environmental agencies, but also raising the possibility of a more sustainable and predictable source of funds for on-going capacity building.

#### ***Strengthening Capacity for Effective Environmental Impact Assessments***

193. Efforts to strengthen capacity for more effective EIAs need to address four weaknesses in the current system, (i) a lack of expert input for technical reviews, (ii) a widespread ignorance of requirements and procedures, both in government and the private sector, (iii) the lack of a system to identify projects, both public and private, that should be required to submit an EIA, and (iv) the current weak enforcement of EIA clearance conditions.

194. Providing resources to access expert advice would help the Pakistan and provincial EPAs ensure that information provided in EIAs is adequate, and effectively used in the decision-making process. Expert guidance would be particularly useful to ensure that alternatives, mitigation measures and monitoring are appropriately addressed. To build broader awareness of EIA requirements, assistance should be provided to enable all provinces to establish EIA training programs similar to that of NWFP, in partnership with local universities or other training organizations. External technical assistance could also be used to develop systems to ensure better coverage of EIAs, and to provide the additional technical and legal capacity required to help enforce implementation of environmental management measures identified in EIAs.

#### ***Outsourcing Technical Functions for Urban Air Quality Management***

195. In order to manage urban air quality, it is critical to monitor criteria pollutants and conduct emissions inspections of priority sources. The primary responsibility for this should rest with provincial EPAs. International experience underlines the need to ensure sustained resources for the operation and maintenance of monitoring equipment, and to retain trained technical staff.

To address these issues, outsourcing technical functions to private or academic institutions should be considered, drawing on international experience with private sector contracts for air quality monitoring, the operation of emissions inspection and vehicle maintenance programs, as well as initiatives to reduce emissions from corporate vehicle fleets.

### ***Building Capacity to Protect Water Quality***

196. The emphasis of the NEP on ensuring the safety of water supplies highlights the need to increase resources for this purpose at all three levels of government, with an emphasis on coordination at the Federal level, enforcement at the provincial level, and investment locally. The three priority areas for strengthening the capacity of MoE, provincial environmental authorities, and local governments are: (i) protection of water sources; (ii) water supply and sanitation service provision; and (iii) regulation of drinking water quality.

197. Protection of ambient water quality (both surface and groundwater) is an essential part of the mandate of the environment authorities. The establishment of a use-based system for classification of water bodies and the subsequent clean-up of priority waterbodies will require significant resources over a lengthy period. Even during the initial process of agreeing Beneficial Uses for selected critical water bodies, Federal and provincial environmental authorities will require substantial technical assistance for water quality monitoring and stakeholder consultation.

198. The need for physical investments is greatest at the local level, where the devolution process has assigned responsibility for water supply and sanitation to local governments. The NWP stresses the need to engage the private sector in the delivery of these services, to supplement scarce public resources. To help TMAs meet this challenge, there is an urgent need to develop legal frameworks to guide private-public partnerships.

199. The ideal system for regulation of drinking water quality would be a tiered one, with local capacity for routine monitoring of a few simple parameters, provincial resources sufficient for regular oversight of the local systems, and MoE providing quality assurance and consolidated reporting at the national level. Designing and putting such a system in place will be an important task for MoE, requiring a significant level of expert input, equipment and training.

### ***Mainstreaming and Upstreaming***

200. Many of the investments with the most significant environmental consequences are those undertaken by the Federal or provincial governments, for example in roads, irrigation and power. In November, 2004, ECNEC issued a notice reinforcing the requirement that EIAs should be prepared for all major public sector investments. While environmental cells have been created in a few key agencies, additional resources and incentives are required to increase the capacity of key line agencies to prepare adequate EIAs, and effectively implement associated Environmental Management Plans.

201. The Environment Section of the Planning and Development (P&D) Division is an important force for environmental upstreaming through its mandate to address environmental concerns at the policy, project conceptualization, and approval stages of public sector projects. Provincial planning departments have established corresponding environment sections for environmental screening of project proposals within their jurisdictions. The establishment of these sections is significant, and their limited permanent capacity should be supplemented with expert assistance as necessary to conduct detailed environmental reviews and advise on the preparation of environmental management plans.

202. In order for environmental considerations to be more fully upstreamed into national policy-making, planning and budgeting, MoE must lead the sustainable development dialogue. Within this dialogue, and in particular through the PRSP update process, the effective promotion of sustainable development will require more rigorous analysis demonstrating that environmental degradation is a constraint to economic growth and poverty reduction. The MoE can help guide this PRSP update process by preparing an environment chapter for the PRSP II which would outline the environmental management challenges and opportunities associated with accelerated growth. To produce and help present such analysis, MoE will require additional resources to contract the necessary analytical expertise.

#### **4. Reinforcing Incentives and Accountability**

203. Accountability to stakeholders is essential for sound environmental management, and will only be achieved by ensuring stakeholders are informed and empowered. Opportunities to strengthen environmental accountability in Pakistan include measures to improve public consultation and disclosure in the EIA process, the public provision of information on environmental quality, and support for the involvement of civil society in environmental management and enforcement.

##### ***Public Consultation and Disclosure of EIAs***

204. As recognized in the EIA Guidelines, strong public participation in the EIA process benefits both project proponents and other stakeholders; however consultation in Pakistan has often proven to be limited and ineffective. Possible measures to strengthen this process include: (i) requiring project proponents to develop a public consultation plan, (ii) creation of EIA information centers at federal and provincial levels, (iii) public disclosure of all EIA filings on a website for easy access by the public and private sector, and (iv) public provision of a non-technical summary of EIA decisions.

##### ***Public Information to Support Clean Air and Safe Water Initiatives***

205. Local and national air quality information dissemination strategies are required, both to build public support for urban air quality improvement initiatives, and to enable the issuance of health alarms in case of serious exceedance of standards. As most emissions abatement measures involve trade-offs requiring public support, the PCAP should place considerable emphasis on the public provision of air quality data and associated health impacts. Dissemination strategies may include the daily publication of an Air Quality Index, as discussed in Chapter V.

206. As with air quality data, the public provision of information regarding drinking water quality not only enables health alerts to be issued, but also builds support for water supply investments, and most importantly, for recovery of the costs necessary to operate and maintain safe water supply systems.

##### ***Empowering Civil Society***

207. Citizen involvement is an important resource for environmental compliance and enforcement. While there is often a tension between government regulators and civil society organizations, they share an interest in ensuring a healthy environment. Active citizen involvement in environmental enforcement can help supplement an agency's efforts by raising public awareness and building popular support for otherwise controversial enforcement actions.

This role can be reinforced both by involving concerned civil society stakeholders in environmental management, as achieved, for example through the Lahore Clean Air Commission, and by supporting public interest advocacy through legal associations and the establishment of environmental law clinics at universities.

## **5. Rising to the Challenge: A Proposed Way Forward**

208. The approval of the NEP and the significant increase in the Federal budget proposed for environmental management in the MTRF present both a challenge and an important opportunity for Pakistan's environmental authorities. Meeting the challenge and rising to the opportunity will require not only a strategic program of capacity building, but also the establishment of incentives to encourage improved performance in environmental management at all levels of government.

### ***Incentive-Based Partnerships: National Goals, Local Priorities***

209. One institutional approach to building capacity and encouraging improved performance at different levels of government is to develop incentive-based partnerships between the Federal and provincial EPAs, as well as between provincial authorities and local governments. These would link the transfer of financial support for institutional strengthening with demonstrated performance in improved environmental management.

210. For its implementation, the NEP calls for a framework of action plans at all three levels of government. To establish incentive-based partnerships, Federal and provincial environmental authorities would mutually agree goals and priorities, performance indicators and needs, and define respective roles and responsibilities. This would fall naturally within the process of developing action plans at the Federal and provincial levels envisioned in the NEP. These action plans would include agreed performance indicators around identified provincial priorities, which would in turn contribute to national goals for the environment as set out in the NEP. Similarly, provincial governments would, as appropriate, establish performance-based partnerships with district and tehsil governments for environmental functions devolved to the local level. Further building on the vision established in the NEP, funds would be transferred between levels of government following satisfactory achievement of the agreed indicators. Two important prerequisites for such an approach to function effectively are (i) the translation of the NEP's broad directions into specific targets, and (ii) the establishment of an efficient system of performance-based transfers, combining transparent decision-making with the minimum number of administrative hurdles.

### ***Pakistan Clean Air Program***

211. MoE is developing the PCAP as a vehicle to support a range of ongoing and proposed initiatives for the management of urban air quality, involving a variety of sectors, levels of government and development partners. The complexity of the issues to be addressed, involving both city-specific and inter-sectoral considerations, suggests that the PCAP might best be supported as a stand-alone program, complementing broader incentive-based partnerships for NEP implementation.

### ***A Strategy for World Bank Assistance***

212. The World Bank is strategically placed to support both the development of incentive-based partnerships to meet the goals of the NEP, and the implementation of the PCAP. The Bank's support for the NEP is initially focused on providing technical assistance to MoE for the

development of provincial action plans. Drawing on the lessons of international experience with similar exercises, the aim is to facilitate a process through which provincial authorities will establish their own priorities within the broad matrix of national environmental goals laid out in the NEP. The Bank is prepared to provide analytical support to help provincial authorities establish environmental management priorities based on consideration of economic, technical and social realities, as well as assistance with the definition of monitorable indicators to provide the basis for measuring performance. As action plans are defined, the Bank is also prepared to consider investment support for their implementation.

213. For implementation of the PCAP, while JICA is funding monitoring equipment which will provide necessary data, there is limited capacity to plan and implement specific interventions. The Bank has been asked to bring implementation experience from other cities in the region, which will be provided initially through technical assistance, with the possibility of subsequent investment support as plans become more concrete.

214. In addition to providing assistance for implementation of the NEP and PCAP, the Bank also plans to support further analysis of selected priority environmental concerns. Potential issues to be addressed include industrial and urban pollution, environmental management in the water sector, and sustainable environmental management at the local level.

### ***Immediate Actions***

215. The list of recommended actions presented in this report is extensive, and will take a number of years to implement. However, the range of environmental challenges facing Pakistan is also extensive, and ignoring these problems will only result in accelerating economic damage that will impede growth and poverty-reducing development. To catalyze the reform process, there are some priority actions among the proposed interventions that should be immediately initiated by MoE, including:

- establishment of standards for environmental quality, especially ambient air quality standards, use-based ambient water quality standards, and drinking water quality standards;
- establishment of oversight guidelines for the EIA clearance functions delegated to the provinces;
- contribution of an environment chapter to the PRSP update; and,
- development of protocols for the collection, analysis and dissemination of data on natural resource management. While this report has focused on urban and industrial environmental challenges, there are growing problems in sustaining the country's natural resources, and effective interventions are constrained by the paucity of data.

**Appendix 1: Measures Proposed in the Pakistan Clean Air Program**<sup>32</sup>

Short Term Measures	Responsible Agency	Long-term Measures	Responsible Agency
Stop import and local manufacturing of two stroke vehicles	M/O Commerce and M/O Industry	Creation of public awareness and education	M/O Environment and Provincial Environment Department
Restriction on conversion of vehicles from gasoline engine to second-hand diesel engines Launch effective awareness campaign against smoke emitting vehicles	Provincial Government	Setting up continuous monitoring stations in cities to record pollution levels in ambient air	M/O of Environment and Provincial Government
High pollution spots in cities may be identified and control through better traffic management such as establishment of rapid mass transit and traffic free zones	Provincial Government	Introduction of low sulphur diesel and furnace oil and promotion of alternative fuels such as CNG, LPG and mixed fuels in the country	M/O Petroleum and Natural Resources
Capacity building of Motor Vehicle Examiners	Provincial Government	Identify pollution control devices/additives for vehicles and encourage their use	M/O Environment, M/O Petroleum
Regular checking of quality of fuel and lubricating oils sold in the market	M/O Petroleum and Natural Resources	Promotion of waste minimization, proper disposal of solid waste in cities, waste exchange and pollution control technology in industries	Federal and Provincial EPAs, FPCCI, and M/O I&P)
Covering of buildings/site during renovation and construction to avoid air pollution	Provincial Government	Improvement of energy efficiency in vehicles and industry	M/O Environment
Phasing out of 2-stroke and diesel run public service vehicles	Federal and Provincial Governments	Review Motor Vehicle Ordinance to provide for inspection of private vehicles	Federal and Provincial Governments
Base line data collection on ambient air quality using fixed and mobile laboratories	Federal and Provincial EPAs	Establish vehicle inspection centres	M/O Communication and Provincial Government
CNG driven buses will be given tariff preference	M/O Industries and M/O Finance	Block tree plantation in cities, forestation in deserts and sand dune stabilization	M/O Environment and Provincial Forest Department
Fiscal incentives and a financing mechanism are adopted to provide resources to the transporters	M/O Communication and Provincial Government	Shoulders along roads should be paved	M/O Communication and Provincial Government
Launch of effective awareness campaign against smoke emitting vehicles	Provincial Governments		
Establishment of environmental squad of traffic police in all major cities to control visible smoke	Provincial Governments		

<sup>32</sup> From Annex 2 of PCAP, 2005.