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19 APRIL 2023

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PUNJAB CLEAN AIR POLICY

(with phased action plan)

Environment Protection Department
Government of the Punjab

2023

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"Government of the Punjab
Environment Protection Department
Dated, Lahore the 17th April, 2023

NOTIFICATION

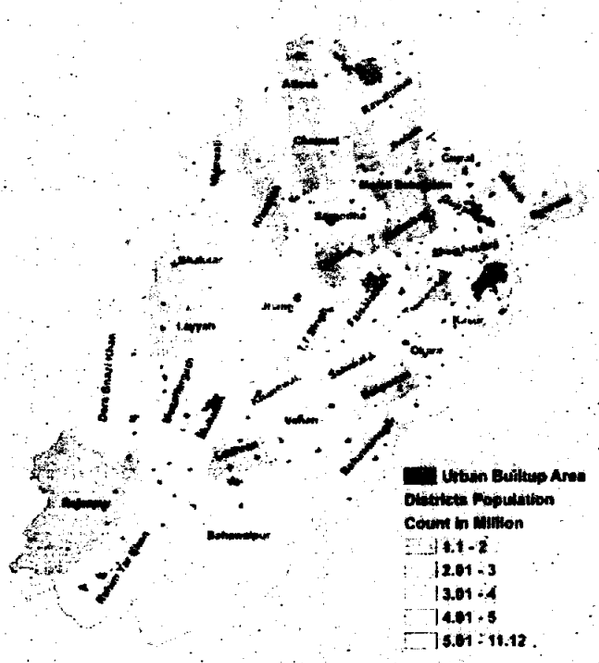
POLICY NUMBER – No. SOG/EPD/7-26/2013(P-II)

EFFECTIVE DATE – Environment Protection Department, Government of the Punjab is pleased to notify the following policy approved by the Punjab Environmental Protection Council in its 7th meeting held on 29.03.2023.

POLICY TITLE – Punjab Clean Air Policy (with phased action plan)

1. PROBLEM DEFINITION

Global Health Observatory of the World Health Organization recorded 200 death per 100,000 population attributable to environmental factors and the World Bank estimated disease burden in the form of 22000 premature adult deaths and 163;432 Disability-adjusted life years (DALYs) due to outdoor air pollution in Pakistan[1]. Punjab is the most populous province and its 110 million dwellers constitute an overall 52% population count of the country. It consists of 10 administrative divisions and 41 districts situated over an area of 205345 sq. km. Around 75% of national exports are derived from agriculture sector and Punjab contributes 60% of it. However, geographic spread of population and industry is skewed along the eastern boundary. Lahore, Faisalabad, and Gujranwala Divisions account for 22% area and population residing in these divisions makes 45% portion of the

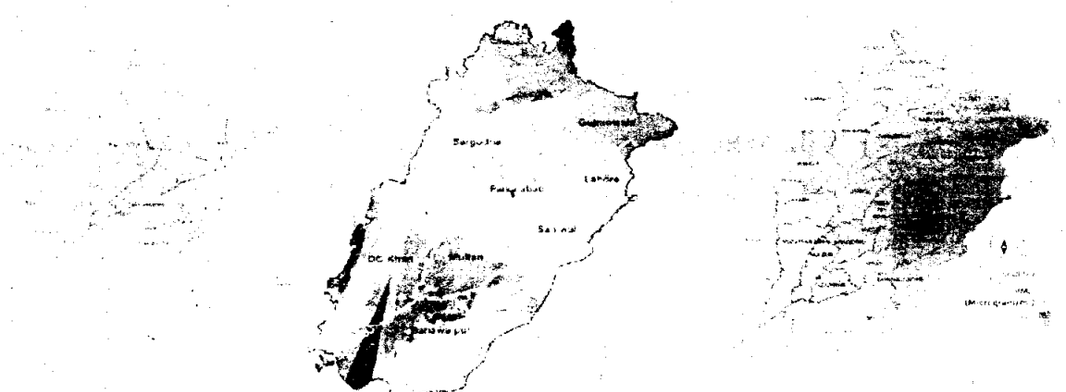


[1] https://www.emro.who.int/pak/programmes/environmental-health.html#:~:text=The%20World%20Bank%20estimates%20that,and%2028%20000%20deaths%2Fyear

Province[2]. According to agro-ecological classification, this area is famous for wheat, sugar cane, and rice. Therefore, major food processing industries do exist in this area.

Spatial distribution of particulate matter ($PM_{2.5}$) observed through satellite sensors suggests that the main urban centers situating in the *Rachna Doab* i.e., Lahore, Kasur, Sheikhupura, Faisalabad, Gujranwala, Sialkot, and Narowal are more prone to air pollution. Recent surveys reveal that it is the area which hosts an 81% industry[3] and regularly witnesses blanket of dense fog (illustrated in figure below).

Since last two decades a distinct urban and industrial growth is witnessed. Majority of the time, Air Quality Index in major cities swells to limits that are considered hazardous for public health and safety. Increasing trend of motorization and fossil-fuel-dominated energy mix are considered as major contributors of greenhouse gases and other pollutants like particulate matter ($PM_{2.5}$& PM_{10}). For example, in last three years, more than one million vehicles were registered in Lahore and this trend read with 2.13% average annual population growth rate and 4.4% annual increase in buildup area[4] intimates about tremendously growing pressure over natural and urban



Source: Map Book of the Punjab and NASA's MODIS

resources. A research study confirms about conversion of green areas to built-up (predominantly housing sector) in and around Lahore. The study maintains that increase in built-up area gives birth to rise in land surface temperature (LST) and warns about a rise of 2°C in average temperature by 2035 if further 3% decrease in green area occurs in Lahore[5].

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[2]Provincial Census Report, 2017
[3]Map Book of Punjab, 2020
[4]https://doi.org/10.1016/j.regsus.2020.06.001
[5]https://doi.org/10.1007/s12517-020-5214-2

Climate induced weather patterns like lowering of wind velocity and variation in relative humidity and meteorological anomaly "temperature inversion" are emergent drivers of manifestation of hazy environment and smog in major cities of the Punjab. A notable increase in minimum temperature across the Punjab was detected which has resultantly squeezed the diurnal temperature range[6] (DTR: the difference between the maximum and minimum temperatures within one day). Royal Society of Chemistry, recently, published an evidence that attributes the reduction in DTR as an indication of increase in aerosol concentration[7]. Despite of prevalence of climate change impacts, expanding spatial extent of smog and air pollution during recent years from Lahore to Bahawalpur (refer to Punjab map of Fog and $PM_{2.5}$) is recognized as a source of panic among the public.

In 2020, Food and Agriculture Organization (FAO) of the United Nations published an assessment[8] apportioning the share of contributing factors of air pollution across the Punjab. Investigations suggest that 43% air pollutants are emitted from transport sector, 25% from industrial, and 20% from agriculture sectors. Findings of another systematic evaluation of smog[9] divulges that concentration of aerosols in 2020 have increased 25% in Lahore and 15% in Multan as compared with the concentrations in 2002. The later study also confirms that 30-40% contribution of pollution in Lahore is from transboundry pollutants and rise in patient numbers and road side accidents were also witnessed in Punjab. Global Change Impact Study Center (GCISC)[10] made initial estimates with Greenhouse Gas - Air Pollution Interactions and Synergies (GAINS) model that, approximatly, 17% particulate matter ($PM_{2.5}$) was contributed by dust and municipal waste, 29% from industry and power plants, 36% from agriculture (crop residue burning, live stock,



[6]https://doi:10.3390/w11091916
[7]https://10.1039/d1ea00021g
[8]https://www.fao.org/documents/card/en/c/ca6989en/
[9]https://iese.nust.edu.pk/wp-content/uploads/2021/05/HEC-PBAIRP_ES_outcome-IESE-SCEE.docx
[10]Mir, K. A. et al (Unpublished), Application of the GAINS IGP-HF AQM Policy Planning Tool: Early findings for Punjab province, Pakistan, Science Policy Dialogue (SPD) on Air Quality Management in the Indo-Gangetic Plain and Himalayan Foothills Collaboration between ICIMOD and the World Bank Katmandu, December 14-15, 2022.

fertilizer) and resedential sources, and 18% from mobile sources.

2. Prevailing Administrative Control Measures

2.1 Smog Policy 2017

Punjab Government on recommendations of Smog Commission – constituted by Lahore High Court[11] – notified the first ever "Policy and Action Plan for Control, Mitigation, Advisory and Protective Measures in Extreme Weather Conditions of Dense Smog in the Punjab"[12] in 2017 which addressed to a broad spectrum of sources of physical and chemical constituents of air pollutants followed by an action plan. Command of actions required to counter smog intensity were use of low Sulfur fuel, adopting Euro-II Standards for vehicular emission, installation of vehicular pollution control devices, better traffic management, controlling burning of municipal waste and crop residue, building capacity to monitor and forecast episodes of high air pollution, controlling fugitive dust from road shoulders and construction sites, planned urban and industrial development, greening of industrial processes, and regional environmental agreement. In the policy, a mechanism for quantification of potential hazards was introduced which uses Air Quality Index as a gauge of state of air quality and prompts for respective actions.

2.2 Administrative measures

Chief Minister Punjab constituted a Cabinet Sub-Committee[13] for better and smoother implementations of the Anti-Smog measures under the Convenorship of Minister for Environment. The Committee monitors progress on actions taken by all concerned departments/agencies to prevent and control smog in the light of recommendations of Smog Commission.

Chief Minister has also constituted a Ministerial Committee on Smog[14] to monitor smog issue throughout the Province under the chairmanship of Minister for Finance, Punjab.

Smog has been declared as "calamity" for the entire province of Punjab under the Punjab National Calamities (Prevention & Relief) Act, 1958 by Relief Commissioner Punjab[15] and

[11]In a W.P. No. 34789/2016 Walid Iqbal v. Federation of Pakistan, etc.
[12]https://epd.punjab.gov.pk/system/files/Policy%20on%20Controlling%20Smog%20%28Final%29_0.pdf
[13]Notification No. SOT/EPD/1-1/2019 dated 07.12.2019
[14]Notification No. DS(FS)CMO/19/OT-4/030655 dated 05.11.2019

through this approach operation of conventional brick kilns was banned and efforts were made to encourage zig-zag technology brick kilns. Moreover, during paddy harvest season, ban on burning of crop residue was imposed under section 4(2)(h) of the Punjab National Calamities (Prevention & Relief) Act, 1958 by the Relief Commissioner and 144 of Criminal Procedure Code and surveillance in light of detection of fire spots with the use of satellite imageries followed by legal action.

Superior judiciary closely observes the rigor of actions taken by provincial and local administration for the control of air pollution and also directs for corrective measures. Public concerns elevate as AQI levels swell. Punjab Government is striving for adoption of a holistic approach to address the issue of air pollution and smog across the province round the year.

3. CHALLENGES

Challenges faced to control the air pollution and smog in Punjab include but not limited to following;

Data on air quality in the province is scant. Sporadic monitoring of air pollutants suggests that ambient air standards for particulate matter with size 2.5 micron (PM 2.5), oxides of Nitrogen (NOx) and Sulphur (SOx) exceed more frequently. There are no standard and monitoring mechanism for secondary pollutants which exacerbate the problem particularly. Furnace oil with high Sulfur contents used by small and medium industrial units, burning of agricultural residues and municipal waste, and vehicular emissions are counted as the major sources of these pollutants.

A wide range of small to medium-scale industries, including brick kilns, steel mills and furnaces make a much larger contribution as compared to the size of their economic activity due to the use of waste/sub-standard fuels such as old tyres, paper, textile waste, etc. At the micro-level, air quality is further worsened due to widespread use of small diesel electric generators in commercial, and residential areas in response to electricity outages and inefficient burning of biomass (animal dung) in rural areas for cooking and heating purposes. Being a regional and

complex phenomenon, the problem of air pollution and resulting smog can only be dealt with concerted and planned efforts of the provincial and federal governments.

4. ALIGNING WITH NATIONAL AND INTERNATIONAL COMMITMENTS

4.1 Fundamental Right – Security of Person

Undoubtedly, pollutants in air are determinant to health and safety of living beings. Article 9 of the Constitution of Pakistan, 1973 recognizes security of person as a fundamental right and protects right to life. The right to life including protection of environment and pollution abatement has been enunciated by august Supreme Court of Pakistan[16]. It is expedient to take all structural and non-structural measures for keeping environment clean and living-friendly.

4.2 Contribution to SDGs

Pakistan is pursuing UN's adopted global goals "Sustainable Development Goals" for making progress on universal agenda of poverty alleviation, planet protection, and ensuring an environment wherein people enjoy peace and prosperity. Precisely, SDG 3.9 suggests to "by 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination." Similarly, SDG 11.6 warrants a concerted approach for "by 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management." This policy would pave ways to substantially take part in achievement of global targets through local actions by adopting international best practices.

4.3 Clean and Green Pakistan

Federal government's "Clean Green Pakistan Movement" is a landmark initiative that places environmental protection and adaptation of climate change at core of all programs. This initiative encompasses behavioral changes and institutional strengthening for five major components (i) plantation, (ii) solid waste management, (iii) liquid waste management/hygiene, (iv) total sanitation, and (v) safe drinking water. Plantation – a great nature-based solution – is taken up for buffering the concentration of pollutants in ambient air and solid waste management as

[16]Ms. Shehla Zia v. WAPDA, PLD 1994 SC 693

preventive measure to cap the dispersion of particulate matter. Improvement in air quality is envisioned through this policy in line with the Clean and Green Pakistan initiative.

4.4 NDCs and COP26

Pakistan falls in top ten countries known for methane emission[17]. At Conference of Parties 26 (COP26), Pakistan was among 100 countries who signed-up to the Global Methane Pledge that suggests for 30% reduction of methane gas. Pursuant to COP26, Pakistan has reiterated its resolve for fulfilling the commitments made for bringing down the emissions with a range of nature-based solutions (NbS) to technological interventions. Under the updated Nationally Determined Contributors (NDCs) 2021, a 50% reduction in overall projected emissions is due by 2030 and Government of Pakistan has stretched the scope of sectors. Air pollution is taken up as a core sector for building climate resilience. From the targets, 15% emissions reduction is to be made with local funding and remaining 35% through international grant financing.

This policy is a pledge of Punjab Government for playing proportional role in meeting with the national targets of shifting to 60% renewable energy, 30% electric vehicles, and complete ban on coal import by 2030. These targets would enable the government to address emissions control from industrial and transport sectors – responsible for more than 50% of air pollution.

5. OBJECTIVES

To keep the air clean through emission reductions and sustainable green development for increasing access to living-friendly environment. Specific objectives of the policy include, but not limited to, following:

i. Protect the environment particularly living beings from the adverse effects of air pollution and smog.
ii. Lowering the concentration of air pollutants to achieve the ambient air quality standards.
iii. Improving coordination through sector specific roles for ensuring effective monitoring and enforcement against air pollution causing activities.
iv. Increasing investment in resource efficient technologies for abating the pollution.

[17] https://www.iea.org/data-and-statistics/charts/top-ten-emitters-of-methane-2021

v. Fostering development of appropriate economic incentives to encourage the polluting sectors to successfully adopt cleaner technologies.

vi. Minimizing the air pollution from point and non-point sources through collaborative efforts of all stakeholders.

vii. Engagement of civil society for mass awareness and environmental education as cornerstone of policy interventions.

The Policy aims to achieve following targets:

i. 30% reduction of Particulate Matter (PM 2.5 and 10) concentration of 2022 (annual average) by the year 2030 in the most polluted cities i.e., Lahore, Faisalabad, Gujranwala, and Multan.

ii. 25% reduction of major air pollutants (NOx, SOx, Ozone, CO and CO_2) concentration of 2021 (annual average) by the year 2030.

iii. 25% reduction of provincial greenhouse gases emissions by 2030.

iv. 100% installation and operationalization of 30 Air Quality Monitoring Stations (AQMS) and monitoring dashboard and tools in Punjab by 2024.

v. At least 10% of transport vehicles and motor cars paid token tax in last 5 years have valid emission certificates by 2030 under the Vehicle Inspection and Certification System (VICS) program.

vi. 10% increase of urban forest cover around major polluting cities (a total of these cities) by 2030.

vii. 100% conversion of conventional Brick Kilns to Zig-Zag or other suitable technology by 2030.

viii. Grant support to Small and Medium Enterprises (SMEs) in at least 5 industrial sectors to pilot resource efficient and cleaner production (RECP) technologies.

ix. All spaces in the cities and towns left for the parks will be developed as green areas.

6. GUIDING PRINCIPLES

i. Evidence based regulatory regime for effective and efficient pollution abatement supplemented with a data management framework.

ii. Encouraging and promoting stakeholder driven appropriate and feasible technologies and solutions for ensuring success against looming air pollution.

iii. Facilitating stakeholders with the aim to acknowledge the government as a partner cum regulator.

iv. Capacity building of stakeholders through technical and industrial development authorities (like TEVTA, SMEDA, etc).

v. Utilization of environment related funds - use as a leverage to get financing from international agencies.

vi. Incentivize to adopt green technologies with lowest possible interest rate financing coupled with result-based transition mechanism and legislative provision of recovery.

7. POLICY INTERVENTIONS

The methodology to achieve the aforementioned objectives routes through the specific policy measures to be taken under relevant laws, rules and regulations, and citizen engagement:

7.1 Transport Sector

i. Minimize and control the extent of vehicular emissions.

ii. Reduce dependance on fossil fuel-based mode of transportation and improved fuel quality.

iii. Control of vehicular emissions through administrative measures.

7.2 Municipal Sector

i. Reduce sources of fugitive dust particularly in municipal areas by engineering and administrative measures.

ii. Maintain clean environment through effective waste collection and disposal system.

iii. Reinvigorated of urban environment through green practices.

7.3 Industrial Sector

i. Reduce and control the menace of air pollution generated by industrial sector.

ii. Incentivizing the small and medium industrial enterprises for lowering the concentrations of air pollutants.

iii. Ensuring implementation of effective administrative measures for emissions reduction.

7.4 Agriculture and Livestock Sectors

i. Curtail the quantum of air pollution from agriculture and livestock sector.

ii. Environment-friendly management of agricultural waste for avoiding the contribution to air pollution.

iii. Facilitating and promoting the stakeholders for adoption of resource efficient agricultural practices for reduction of air pollution load.

7.5 Energy Sector

i. Transition to non-combustion mode of energy production.

ii. Introduction and promotion of energy conservation techniques.

iii. Reducing energy consumption through renovation and replacement of energy intensive process and equipment.

iv. Encourage indigenous technologies for non-conventional means of power generation and incentivization.

7.6 Infrastructure/ Housing Sector

i. Integrating the concept of sustainable urban development in master planning of urban centers.

ii. Promoting access to clean energy particularly in rural and semi-urban areas.

iii. Updating the regulatory regime and taking administrative actions in accordance with principles of sustainable development.

7.7 Public Health

i. Ensure reduction or elimination of public exposure to critical air pollution events.

ii. Prompt administrative actions to deal with health emergency and control of air pollution.

8. IMPLEMENTATION MECHANISIM

Implementation mechanism of the Punjab Smog and Clean Air Policy will follow the following key steps:

8.1 **Action Plan**: An indicative action plan is prescribed in Schedule-I.

8.2 **Implementation of Health Advisory System for Critical Air Pollution Events to ensure public health safety**.

8.3 **Financial arrangements**

i. Utilizing Punjab Sustainable Development Fund, Environmental Endowment Fund and global funding options like Green Climate Fund, Global Environment Facility for piloting pollution abating technologies and financing community led emission reducing initiatives.

ii. Incentivizing the low carbon investments/projects for reducing carbon foot prints.

iii. Introduction of green *sukuk*/bonds for facilitating the potential projects/investments.

iv. Align and apportion the public development and non-development fund towards achievement of targets of the policy.

v. Promote private sector and public private partnership investments for transition to green processes and circular economy.

8.4 Criteria for classifying the health emergency

Multi-parameter based AQI criteria for classifying the health emergency is prescribed in Schedule-II.

8.5 Legislation

Amendments in the existing legal instrument, based on past practices, or new enactment, where necessary, for smooth implementation of policy measures/interventions and action plans be promulgated.

8.6 Research and Development

i. Design of affordable and efficient pollution control devices for steel furnaces, re-rolling mills, smelters, industrial boilers etc.

ii. Feasibility of alternative fuels like ethanol as biofuel to use in transport sector.

iii. Sorting industrial sectors/processes for categorizing energy and resource-intensive, high emissions contribution sectors.

iv. Exploring latest technologies meant for reducing emissions from major contributing sectors and their local cost and acceptability.

v. Strengthening weather forecasting and air quality prediction through application of modern technologies and computational techniques in collaboration with PMD and SUPARCO.

vi. Prioritizing the locations for piloting air pollution control solutions.

vii. Air pollutant apportionment study for understanding the sources of pollutants and its inventory.

viii. Quantification of assimilative capacity of air-shed within provincial boundaries and its seasonal variation for measuring the resilience of ambient environment.

ix. Study of causal relation of human health exposed to pollution from selective exposure (stone crushing industry/steel industry/cement industry/traffic police etc).

x. Ascertaining the accuracy and efficacy of low-cost air quality monitoring sensors and satellite products in comparison with standard apparatus.

xi. Creating a research group comprising technical experts of each department for recommending further relevant thematic areas and cross cutting topics to the Government and academia for conducting research and informed decision making.

8.7 Capacity Building

Environment Protection Department will build its institutional capacity through establishing an Environmental Monitoring Center and expanding the extent of air quality monitoring network across the province. Government will build capacity of PMD for accurate data collection and sharing, traffic police and transport department to regulate traffic in major cities and employee stat-of-the-art techniques for systematic fitness monitoring of vehicles. Trainings and workshops of all relevant departments for exploiting the potential of international financing sources related to environment and climate mitigation.

Ensure better coordination amongst government departments and stakeholders for effective implementation of this policy and action plan.

9. COORDINATION AND MONITORING

9.1 Provincial Steering Committee on Clean Air

A committee on provincial level will be formed with following composition to be oversee the implementation of guidelines, review of measures, programs and plans proposed by implementing agencies:

1) Chief Secretary Punjab	Convener
2) Additional Chief Secretary (Home)	Member
3) Secretary Environment	Member/Secretary
4) Secretary Local Government & Community Development	Member
5) Secretary Forest, Wildlife, & Fisheries Department	Member
6) Secretary Transport	Member
7) Secretary Information and Culture Department	Member
8) Secretary Schools Education Department	Member
9) Secretary Special Education Department	Member

10) Secretary Livestock & Dairy Development Department	Member
11) Secretary Primary & Secondary Health Department	Member
12) Secretary Specialized Health Care Department	Member
13) Deputy Inspector General, Traffic Police	Member
14) Secretary Industries	Member
15) Secretary Communication & Works Department	Member
16) Secretary Agriculture	Member
17) Secretary Social Welfare	Member
18) Secretary Energy	Member
19) Director General PDMA	Member
20) Representative of Pakistan Met. Department	Member
21) Representative of SUPARCO Pakistan	Member

9.2 Divisional Environmental Monitoring Committees

Every divisional commissioner will notify an "Environmental Monitoring Committee" which would make sure arrangement of funds from development/non-development budget for the effective implementation of policy measures and constitution & mobilization of Anti-smog squads at tehsil level:

1) Divisional Commissioner	Convener
2) All DCs in the division	Member
3) Director (Development & Finance)	Member
4) All District Monitoring Officers in the division	Member
5) All District Officers (Environment) in the division	Member
6) Additional Commissioner (Coordination)	Member/Secretary

9.3 Smart monitoring dash-board

Environment Protection Department will develop a web- and android-based smart monitoring dash board where all stakeholders would be joined on provincial, divisional and tehsil levels for registering log of activities against set targets/activities for planning, implementation, and monitoring. Involve third party/civil society representation for validating the quality control of air quality monitoring system.

This policy document will be considered as a live document and may be revised or updated on the direction of the Punjab Environmental Protection Council or as deemed necessary.

9.4 Pak-India Joint Group on transboundary air pollution

Haryana and Punjab (Eastern and Western) face issues of visibility and air pollution every year particularly during winter. Satellite data and local reports confirm that uncontrolled stubble burning play an important role in intensification of haze and aerosols and manifestation of critical air pollution events. Therefore, constitution of a joint working group from Pakistan and Indian side is direly needed. Federal Government may be approached to diplomatically materialize this proposal for effectuation of combined efforts aimed at cleaning of airshed from transboundary pollutants through concerted efforts are sharing of lessons learned on both-sides.

9.5 International advisory support

A panel of experts will be pooled, having ability to advise the government on achievement of the objectives and targets. Secretary Environment will host the sessions of the panel. The panel will meet at least twice a year (preferably in March and August), physically or virtually. Representatives of UNEP, FAO, UNIDO, ICIMOD, WHO, and other eminent experts of international academic institutions and NGOs will also be taken on board. Further, provincial government may take up the matter with SAARC countries through federal government for adopting the airshed management policy across the Indo-Gangetic plain (IGP) countries.

SECRETARY
GOVERNMENT OF THE PUNJAB
ENVIRONMENT PROTECTION DEPARTMENT"

(AHMAD ALI KAMBOH)
SECRETARY
Government of the Punjab
Law and Parliamentary Affairs Department

Schedule-I Timebound implementation plan of the Punjab Smog and Clean Air Policy

Sector with Policy Measures	Actions with Timeline			Responsibility
	Short Term (< 1 year/2023-24)	**Mid Term** (1-3 year/2023-26)	**Long Term** (>3 year/2023-30)	
Transport				
i) Minimize and control the extent of vehicular emissions.		Expansion of public transport system and induction of electric-buses in mass transport system.	Implementing a comprehensive old and used vehicles phasing out plan through a consortium of vehicles registering, inspecting and regulating agencies, considering options of buy-back/subsidies, early retirement, and conversion to electric mode.	1. Transport Department 2. TEPA 3. EPD 4. OGRA 5. Excise & Taxation Department 6. Industries Department 7. Finance Department 8. P&D Board
ii) Reduce dependance on fossil fuel-based mode of transportation and improved fuel quality.	Promoting the electric and hybrid vehicles particularly to replace Qing-Qi/auto-rikshaws by creating market-based linkages.	Registration of electric vehicles and charging stations with considerable proportion of power supply from alternate energy sources like solar energy etc.	i. Promote non-motorized means of transportation within urban territories. ii. With the facilitation of Federal Government, ensuring supply of Euro-V and above compliant fuel at retail points in metropolitans to steadily increase its market share.	

Sector with Policy Measures	Actions with Timeline			Responsibility
	Short Term (< 1 year/2023-24)	**Mid Term** (1-3 year/2023-26)	**Long Term** (>3 year/2023-30)	
iii) Control of vehicular emissions through administrative measures.	i. Enforcement of VICS certification for ensuring emissions compliance with PEQS in all districts for passenger vehicles and private vehicles. ii. Append the payment of token tax with valid VICS certificate. iii. Banning the entry of vehicles, older than 30 years, in Lahore during the months of October to December. iv. Removal of encroachments along main roads and commercial markets (TEPA, Traffic Police and MCs) and introduce hourly parking rate to ensure efficient parking turn over.	i. For curtailing emission contributions from vehicular sector, revise the Punjab Environmental Quality Standards for new and used vehicles. ii. Employing Intelligent Transportation System (ITS) and enforcing driving licenses in major cities to improve traffic management. iii. Upgradation of the system to smart stickers – digitally readable at main entry points. iv. Provision of drop/ lanes in school premises for preventing road chocking, after feasibility study.	i. The VICS certificate would be issued to vehicles having appropriate catalytic convertors/Diesel Particulate Filters and compliance of PEQS in consonance with the New European Driving Cycle (NEDC). The certificate to specifically mention the above. ii. Devising a mechanism to avoid roadside congestion and subsequent air pollution with concepts like School Districts and Walkable Commercial Areas, after feasibility study.	
Municipal Sector				
i) Reduce sources of fugitive dust particularly in municipal areas by	i. Zero tolerance on sweeping without water sprinkling and solid waste/trash burning.		Updating master plan of each city and adhering the zoning.	1. LG&CD Department 2. HUD&PHED

Sector with Policy Measures	Actions with Timeline			Responsibility
	Short Term (< 1 year/2023-24)	Mid Term (1-3 year/2023-26)	Long Term (>3 year/2023-30)	
engineering and administrative measures.	ii. Covering up/cordoning of the construction sites and ensuring water sprinkling to prevent fugitive dust. iii. Restrict construction and demolition activities in Lahore and major urban centers during the fog/smog months (October to January).			3. Municipal/Metropolitan Corporations 4. Waste Management Companies 5. Development Authorities 6. Parks & Horticultural Authorities 7. Forest Department 8. Finance Department 9. P&D Board
ii) Maintain clean environment through effective waste collection and disposal system.		Implementing Integrated Solid Waste Management (ISWM) and establishing engineered landfill sites in major cities to avoid emissions from open decomposition of solid waste.	Promotion of waste to energy projects for avoiding burning of trash and emission of methane.	
iii) Reinvigorated of urban environment through green practices and urban forestation.	Planting grass, as first priority, and pavement of earthen shoulders, where unavoidable, along the major roads particularly in urban centers with the provision of recharging wells.	i. Mandatory creation of tree-boundary and development of green spaces in existing and new housing projects. ii. Improving green cover in and around the urban centers with special focus to 24-hour		

Sector with Policy Measures	Actions with Timeline			Responsibility
	Short Term (< 1 year/2023-24)	**Mid Term** (1-3 year/2023-26)	**Long Term** (>3 year/2023-30)	
		oxygen emitting trees like Neem etc.		
Industrial Sector				
i) Reduce and control the menace of air pollution generated by industrial sector.	i. Strict compliance of Punjab Environmental Quality Standards for emissions by raising Environment Enforcement Squads. ii. Ban on use of substandard fuel including but not limited to waste plastics, rubber, and cloths/rugs etc. iii. Conversion of conventional brick kilns to Zig-Zag Technology.	For facilitation of industrial sector, publishing the catalogue of sector specific Best Available Technologies (BATs) and Best Practices for pollution control and energy conservation.	Creation of special industrial zones like Tannery zone for shifting industry of similar nature from residential area.	1. EPD 2. Industries Department 3. TEVTA 4. SMEDA 5. MoCC 6. Finance Department 7. P&D Board
ii) Incentivizing the small and medium industrial enterprises for lowering the concentrations of air pollutants.	Causing to extend the share of corporate social responsibility (CSR) of organizations/industries/corporations to municipal and agricultural waste reducing, reuse, and recycling by engaging community of adjoining areas.	i. Promotion of green investment and cleaner technologies among industrial sectors. ii. Incentivizing the industry through loaning/financing at lowest possible interest. iii. Greening the industry though encouragement of use of renewable energy resources		

Sector with Policy Measures	Actions with Timeline			Responsibility
	Short Term (< 1 year/2023-24)	**Mid Term** (1-3 year/2023-26)	**Long Term** (>3 year/2023-30)	
		and providing tax exemptions or other incentives to compliant industry.		
iii) Ensuring implementation of effective administrative measures for emissions reduction.	i. Setting up industry specific environmental quality standards. ii. Restricting industrial establishments outside the designated industrial areas/estates. iii. Absolute restriction on illegal tyres pyrolysis plants, use of carbon powder and used tyres as a fuel. iv. Restrict departments from issuance of NOCs and electric connection for establishment of an industrial unit outside the designated industrial areas.	i. Maintaining the emission load inventory by each industry to keep check over their respective contribution and providing access to Environmental Monitoring Center. ii. Registration and implementation under the Self-Monitoring and Reporting Tool (SMART) Rules.	Regulating the industries for production of energy-efficient appliances.	
Agriculture and Livestock Sectors				
i) Curtail the quantum of air pollution from	i. Zero-tolerance policy on burning of stubble/crop	Sorting out the areas based on soil type and cropping pattern etc, for	Introducing climate smart practices for reducing	1. Agriculture Department

Sector with Policy Measures	Actions with Timeline			Responsibility
	Short Term (< 1 year/2023-24)	**Mid Term** (1-3 year/2023-26)	**Long Term** (>3 year/2023-30)	
agriculture and livestock sectors through technical and administrative measures.	residues and agricultural waste. ii. Ban on crop residue burning. iii. Fixation of rate for provision/sharing of happy seeders on rental basis.	promotion of zero-tillage technology.	contribution of Green House Gases (GHGs) from agriculture and livestock sectors.	2. Livestock Department 3. Local administration 4. Home Department 5. Finance Department 6. P&D Board
ii) Environment-friendly management of agricultural waste for avoiding the contribution to air pollution.	Environment friendly agricultural machinery for management of crop residues like happy seeder/Pak Seeders preferably on 60% subsidy with due consideration of repair and maintenance system.	Promoting straw-mixing technique as an alternate to prevent stubble burning and improving nitrogen efficiency.	Piloting projects for demonstration of biofuel, biochar, and raw material for paper and board industry for environment friendly use of agriculture waste.	
iii) Facilitating and promoting the stakeholders for adoption of resource efficient agricultural practices for reduction of air pollution load.		Mass awareness through farmers organizations and holding street gatherings to promote drill-sowing, discouraging broadcast (چھٹا) method, avoid stubble burning and using environment friendly methods.		
Energy Sector				
i) Transition to non-combustion mode of	v. Conducting energy audit of major public and private	i. Adoption of cleaner production practices for pollutants quantity	i. Re-defining the energy mix by considering	1. Energy Department

Sector with Policy Measures	Actions with Timeline			Responsibility
	Short Term (< 1 year/2023-24)	**Mid Term** (1-3 year/2023-26)	**Long Term** (>3 year/2023-30)	
energy production.	sector infrastructure and transition to net zero emissions and energy efficient regime through retrofitting. vi. Mandatory installation of online stack emission analyzer in major plants/units with their online access to EPA.	control through latest technologies. ii. Promotion of solar energy in existing commercial markets/ plazas/ areas. iii. Mandatory provision of solar systems in all new commercial and industrial establishments.	maximum employment of alternate/renewable energy resources. ii. Replacing coal fired boilers with Combined Heat and Power units in chemical, paper, printing, dyeing, leather, pharmaceutical and other industries.	2. Power distribution companies 3. Industries Department 4. Finance Department 5. P&D Board
ii) Introduction and promotion of energy conservation techniques.	Sensitizing the general masses for energy conservation through reducing the energy losses and use of energy efficient appliances.			
iii) Reducing energy consumption through renovation and replacement of energy intensive process and equipment.		i. Promote standardization and labeling of products, appliances etc. in the province. ii. Provision of catalytic converters upon power generators.		
iv) Encourage indigenous technologies for non-conventional	i. Exemption of tax duties on import of solar panels and air pollution control		Expanding the smart grid system for induction of (solar) electric energy into the system.	

Sector with Policy Measures	Actions with Timeline			Responsibility
	Short Term (< 1 year/2023-24)	**Mid Term** (1-3 year/2023-26)	**Long Term** (>3 year/2023-30)	
means of power generation and incentivization.	technologies. ii. Encouraging indigenous manufacturing of solar panels.			
Infrastructure/ Housing Sector				
i) Integrating the concept of sustainable urban development in master planning of urban centers.	i. Demarcating the traffic congestion areas and arranging the parking spaces or declaring the areas walkable. ii. Digitizing the parking places and its online publication for awareness.	Zoning of the areas under master plan of each city to avoid the merger of industrial, commercial, and residential areas.	Updating/preparing master plan of big cities based on principles of green development and ensuring vehicle parking facilities near transport stations.	1. HUD&PHED 2. Development Authorities 3. Local Administration 4. LG&CD Department 5. Social Welfare Department 6. Finance Department 7. P&D Board
ii) Promoting access to clean energy particularly in rural and semi-urban areas.	i. Solarization of water filtration plants. ii. Use of Improved Cookstoves to Reduce Indoor Air Pollution: Option to utilize improved cooking stoves to reduce the effect of indoor air pollution from biomass burning.	Option to utilize clean and affordable energy options such as liquified petroleum gas (LPG) for indoor space heating and cooking to reduce biomass burning.		
iii) Updating the	Plantation of 2 trees in front of a		Conversion of existing	

Sector with Policy Measures	Actions with Timeline			Responsibility
	Short Term (< 1 year/2023-24)	Mid Term (1-3 year/2023-26)	Long Term (>3 year/2023-30)	
regulatory regime and taking administrative actions in accordance with principles of sustainable development	kanal house, one tree in front of a 5 and 10 marla houses for improving green cover.		buildings to zero-energy building.	
Miscellaneous				
	i. Sprinkling of water on unpaved roadsides and construction material. ii. Covering up the waste/debris/ construction material carrying vehicles. iii. Engagement of local and international NGOs and civil society related to each sector (agriculture, transport, energy, infrastructure, environment, municipal etc.) for sensitizing about civic responsibility, legal obligations and best practices for maintaining clean environment, energy	i. Paving of the earthen road shoulders. ii. Demarcating the air quality attainment and nonattainment zones and publishing the PEQS-based cities ranking within one year of notification of this policy. iii. Improvement of weather surveillance infrastructure.	Establishment of a provincial fuel testing laboratory.	1. EPD 2. PMD 3. Home Department 4. Schools Education Department 5. Local administration 6. Municipal/ Metropolitan Corporations 7. Finance Department 8. P&D Board

Sector with Policy Measures	Actions with Timeline			Responsibility
	Short Term (1 year/2023-24)	Mid Term (1-3 year/2023-26)	Long Term (1-3 year/2023-30)	
	conservation effective transportation and routine green practices. iv. Ensuring supply and sale of approved fuel quality and enforce against fuel adulteration. v. Rescheduling school timings during critical air pollution events.			

Schedule II AQI based criteria for classifying the Health Advisory

Sr. No.	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	CO (mg/m^3)	AQI	AQI Category
1	0.0-75.0	0.0-15.0	0.0-60.0	0.0-40.0	0.0-65	0.0-2.5	0-50	
2	75.1-150.0	15.1-35.0	60.1-120.0	40.1-80.0	65.1-130.0	2.6-5.0	51-100	
3	150.1-250.0	35.1-70.0	120.1-220.0	80.1-130.0	130.1-195.0	5.1-7.5	101-150	
4	250.1-350.0	70.1-150.0	220.1-320.0	130.1-180.0	195.1-260.0	7.6-10.0	151-200	
5	350.1-450.0	150.1-250.0	320.1-800.0	80.1-380.0	260.1-450.0	10.1-25.0	201-300	
6	450.1-550.0	250.1-350.0	800.1-1600.0	380.1-580.0	450.1-550.0	25.1-40.0	301-400	
7	550.1+	350.1+	1600.1+	580.1+	550.1+	40.1+	401-500	Hazardous (Maroon)