



The Urban Unit

Urban Sector Planning & Management Services Unit (Pvt.) Ltd.



MONITOR, INSPECT, COLLECT DATA FOR EFFECTIVE WASTE MANAGEMENT IN PAKISTAN

Presenter: Engr. Anum Shahid
Specialist Solid Waste Management

Regional Dialogue on Transformative Action to End Open Burning of Waste in South Asia



**CLIMATE &
CLEAN AIR
COALITION**
TO REDUCE SHORT-LIVED
CLIMATE POLLUTANTS

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Environmental Strategies

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OVERVIEW OF PAKISTAN'S WASTE STATISTICS

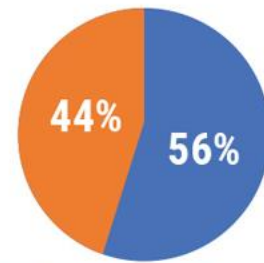
Population: 255.7 million people

Waste Generation: 49.6 million tonnes/annum

Waste Generation Rate: 0.28 to 0.65 kg/cap/day

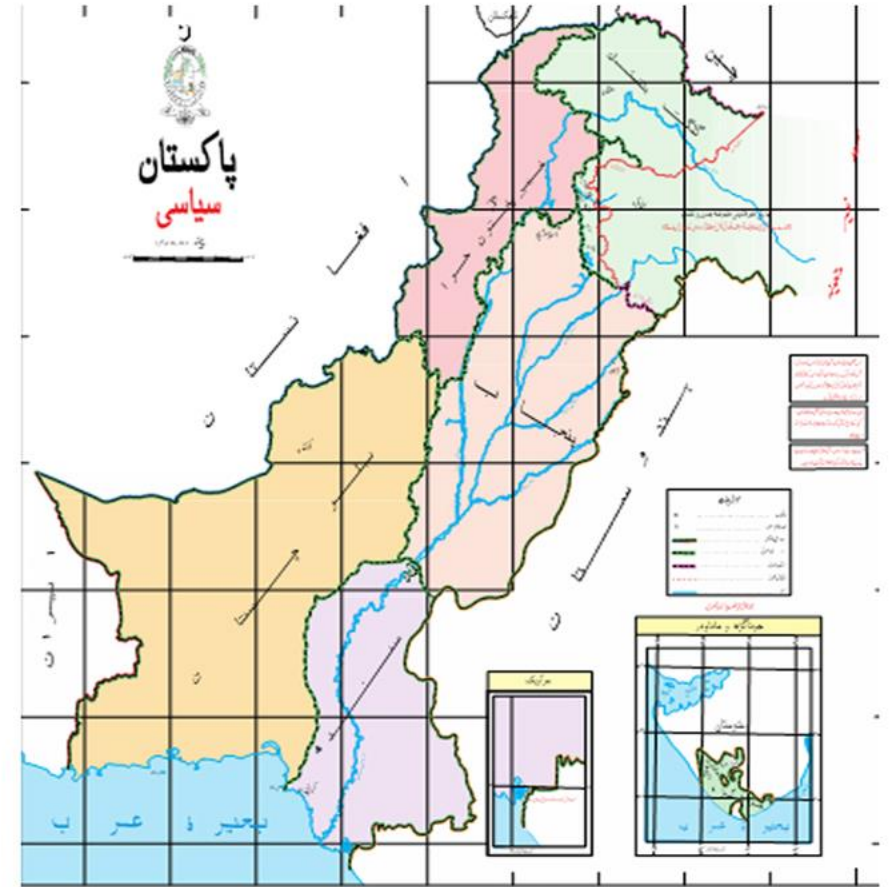
Major Contributors: Mega, Large, Intermediate cities

Waste Composition: Mostly Organic



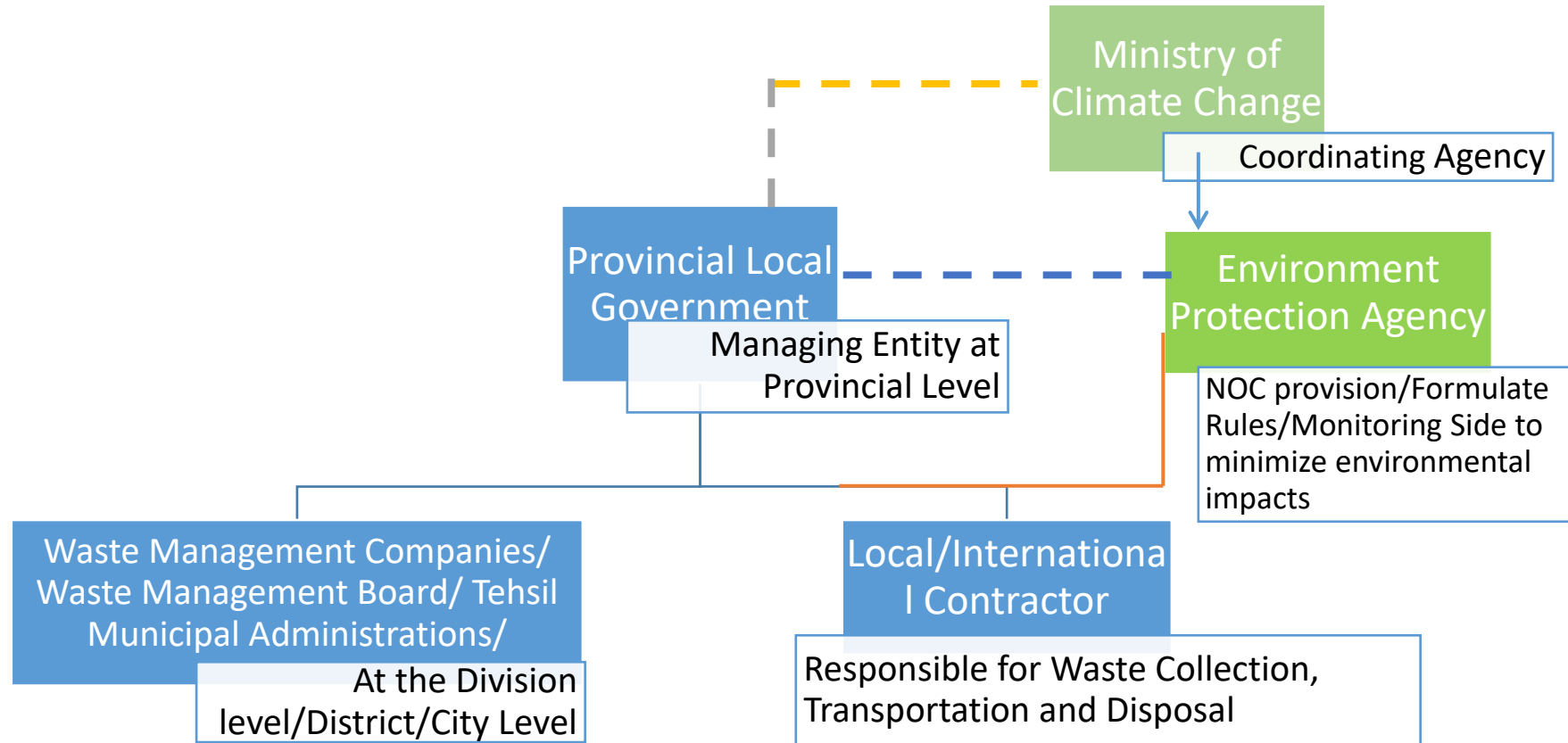
Urban Rural

Share% of Urban and Rural Waste in Overall Waste Generation of Pakistan



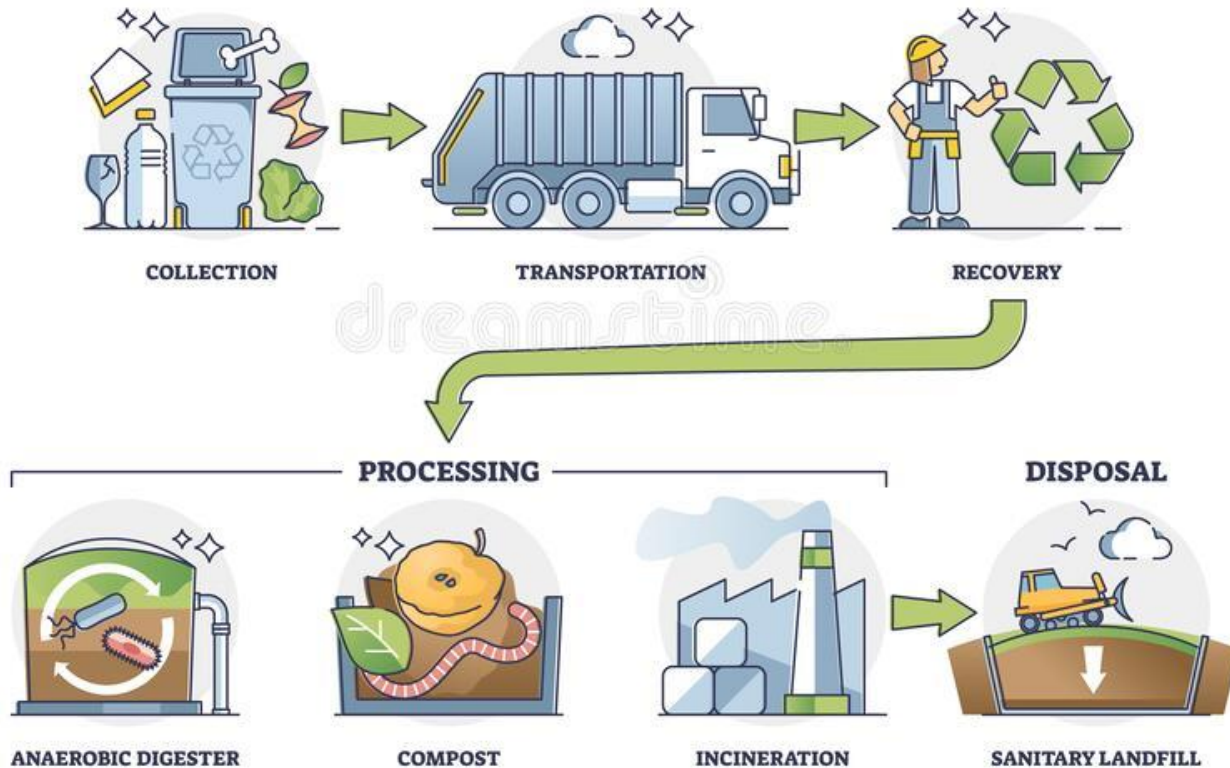
Ref: Waste Management in Pakistan: Switch-Asia report

ADMINISTRATIVE SETUP OF WASTE MANAGEMENT IN PAKISTAN



Solid WASTE MANAGEMENT (SWM) CYCLE

SOLID WASTE MANAGEMENT



What are we missing in Pakistan ????

1. Integration of Housing Societies
2. Waste Regenerative Approach
3. Integration of Informal Sector
4. Waste Infrastructure (WTS, Material Recovery Facility (MRF))
5. Integrated/Controlled Waste Disposal Facility
6. SWM Act/ Regulations/ Strategy

Shifting of Waste???

SWM SECTORAL ANALYSIS- 11 CITIES OF PAKISTAN

No	Category	Indicators	Results										
			Cities	Lahore	Karachi	Faisalabad	Rawalpindi	Multan	Hyderabad	Gujranwala	Peshawar	Quetta	Bahawalpur
Background information on the city													
B1	Country income level	World Bank income category	Lower middle income										
		GNI per capita	\$1,270										
B2	Population	Total population of the city (million)	11.10	16.05	3.56	2.10	2.00	1.72	4.20	1.90	2.50	0.65	0.40
		MSW generation (tons/day)	6,500	15,600	1,600	1,280	1,000	1,213	2,208	753	1,250	282	200
B3	Waste generation	MSW generation (tons/year)	2,372,500	5,694,000	584,000	467,200	365,000	442,745	805,920	274,845	456,250	102,930	73,000
Key Waste-related data													
W1	Waste per capita	MSW per capita (kg/day)	0.54	0.76	0.45	0.61	0.48	0.6	0.5	0.4	0.5	0.42	0.5
		MSW per capita (kg/year)	197	277	164	223	175	219	183	146	183	153	183
W2	Waste Composition:												
W2.1	Organic	Organic (food & green waste)	61.31	34.84	33.18	60.13	53.87	46.51	42.49	30	38.6	44.33	28
W2.2	Paper	paper & card board	2.53	8.36	7.67	4.2	2.4	5.89	11.12	7	2.87	4.9	6
W2.3	Plastics	Plastics	0.74	16.86	3.3	1.04	2.2	8.79	9.62	2.0	0.34	7.01	10
W2.4	Metals	Metals	0.09	0.61	1.00	0.09	0.3	3.66	0.56	0	0.05	1.69	2
Physical Components: 4 key fractions - as % of total waste generate													
1.1	Public health - waste	Waste collection coverage	90	75	56	78	67	74	34	60	70	80	60
1.2	collection	Waste captured by the system	84	50	43	61	60	49	34	56	60	75	60
1C		Quality-waste collection service	71	42	50	46	38	29	42	46	50	58	42
2	Environmental control - waste	Controlled treatment & disposal	84	60	43	61	60	0	34	45	60	61	50
2E	treatmnet & disposal	Env. Protection of treatmnet & disposal	50	33	25	33	21	17	29	29	25	33	13
3		Recycling rate	21	26	8	20	13	28	6	11	18	6	7
3R	Reduce, reuse & recycle	Quality of 3Rs	21	13	17	8	8	4	8	8	8	8	4
Governance Factors													
4U	Inclusivity	User inclusivity	67	42	54	63	46	25	58	50	29	54	29
4P		Provider inclusivity	25	55	25	25	15	50	20	15	20	20	15
5F	Financial sustainability	Financial sustainability	70	70	55	60	55	30	60	55	40	55	45
6N	Sound institutions, proactive	Adequacy of national SWM framework	21	71	13	21	17	54	17	25	17	21	17
6L	polices	Local institutional coherence	79	88	63	75	67	42	67	75	38	58	46



Key for color coding

Low : Red
 Low/ Medium: Red/ Orange
 Medium: Orange
 Medium/ High: Orange/ Green
 High: Green

Key for Abbreviations

B – Background Data 4U – User Inclusivity
 W – Waste Data 4P – Provider Inclusivity
 1C – Public Health 5F – Financial Sustainability
 2E – Environmental Control 6N – National Framework
 3R – Resource Management 6L – Local Institution

SWM SECTORAL ANALYSIS- 11 CITIES OF PAKISTAN

Decentralized and Fragmented Data Sources

- Various Sources for Waste Generation
- Multiple stakeholders in Waste Sector
- No standardized format for data collection
- Inconsistent Waste Classification
- Manual data entry and field observations – data loss and human error
- Absence of real-time data record Manual fuel record/ consumption at landfills

Temporal & Spatial Limitation

- Previous years/ historical data on waste collection and disposal etc. is not available
- Absence of regular waste characterization studies
- Absence of centralized data bank in WMCs
- No staff retention policy – data lost
- Sub-urban and area-specific data on waste collection and disposal is missing

Manual Data Collection Practices & Monitoring Gaps

- Manual data entry and field observations – data loss and human error
- Absence of real-time data record – **gradually WMCs are moving towards digital** Monitoring only for vehicles and android attendance
- Absence of Centralized Monitoring System
- Monitoring KPI's is not up to the mark
- **Absence of Monitoring mechanism of Waste Disposal sites/Transfer stations**

DATA COLLECTION CHALLENGES – LIMITATION & IMPACTS

Limitations	Impacts
Lack of real-time data (Waste generation per capita for organic, plastic, C&D, etc.)	Poor decision-making and delayed responses
Inaccurate weight/ volume estimates – Based on number of trips	Misleading performance metrics and planning errors – based on just estimates
Incomplete lifecycle tracking (Recycling & Reuse rates)	Gaps in understanding of waste from source to final disposal – informal recovery
Limited access to historical data (waste diversion & GHG from transportation)	Hinders long-term policy planning and forecasting
Inadequate integration with other data – economic survey of Pakistan (Waste composition & Socio-economic classes)	Poor alignment with environmental impact, health, or economic goals

WASTE BURNING

- A portion of uncollected is disposed of into large drains, water bodies, and vacant lands.
- Around 3% of municipal solid waste uncollected in cities is usually burnt in streets, open plots, or roadside.
- Burning of agricultural waste during the crop harvest season
- Burning of Municipal Solid Waste at Waste Disposal Site (4-5%)
- Despite being a small proportion, its burning still contributes to:
 - Localized air pollution (PM2.5, Smog)
 - GHG emissions (CO₂, CH₄, N₂O)
 - Climate forcing via black carbon release

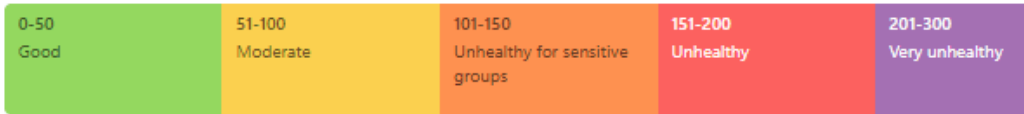


BURNING OF UNCOLLECTED WASTE

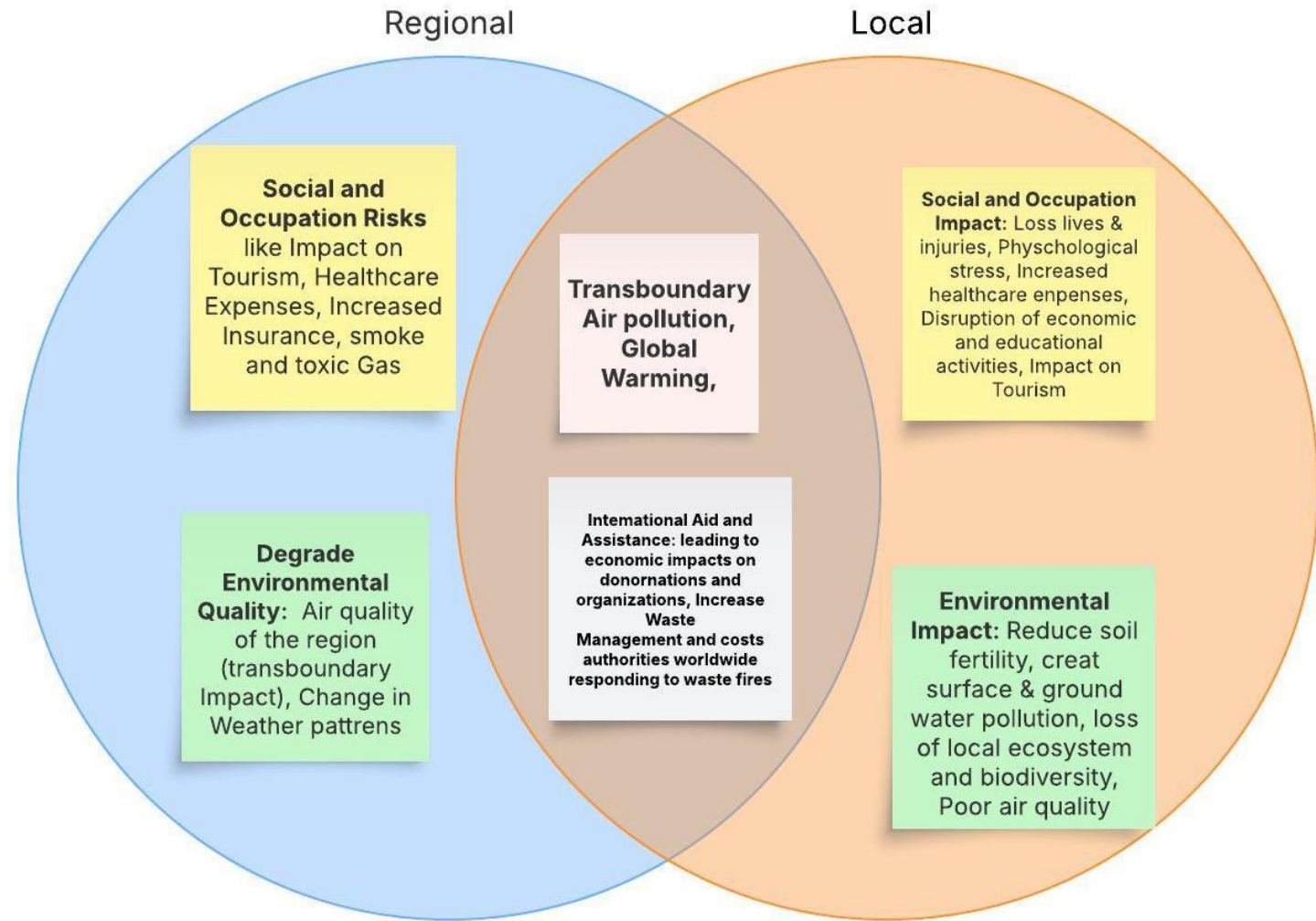
Sr. No.	District	Waste Generation (T/d)	Waste Collection (T/d)	Waste UnCollection (T/d)	Uncollected waste Burnt (T/D)
1	Attock	817	627	190	6
2	Rawalpindi	2,780	2,399	381	11
3	Chakwal	654	370	284	9
4	Jhelum	551	392	159	5
5	Bhakkar	718	539	179	5
6	Khushab	564	379	185	6
7	Sargodha	1,719	1,218	501	15
8	Mianwali	652	481	171	5
9	Gujranwala	2,099	1,701	398	12
10	Gujrat	1,304	969	335	10
11	Hafizabad	513	389	124	4
12	Mandi Bahauddin	659	498	161	5
13	Narowal	704	429	275	8
14	Sialkot	1,726	1,412	314	9
15	Lahore	5,139	4,803	336	10
16	Kasur	1,568	1,239	329	10
17	Nankana Sahib	605	460	145	4
18	Faisalabad	3,054	2,389	665	20

IMPACTS & ACTION TAKEN - WASTE BURNING

- In Pakistan for several years, smog have been at the Highest Level :
 - Lahore was declared the most polluted city after Delhi

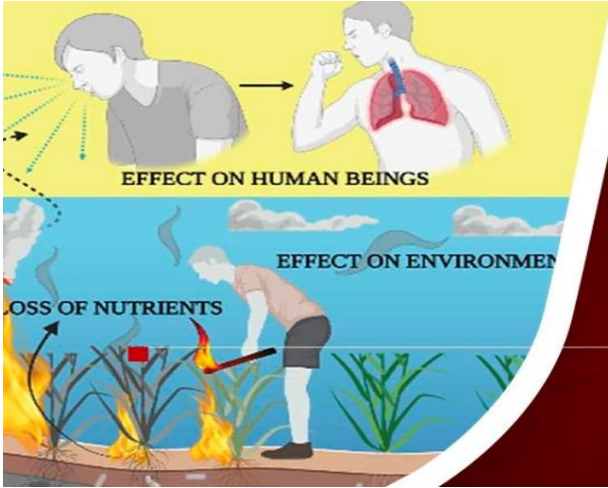


Rank	Major city, country/region	AQI* US
1	Delhi, India	368
2	Lahore, Pakistan	201
3	Baghdad, Iraq	198



IMPACTS & ACTION TAKEN - WASTE BURNING

- Closure of Schools and Businesses
- Declaration of Health Emergency
- Ban on public movement in high PM2.5 areas



فصلوں کی باقیات کو جلانا بیماریوں کی صورت میں موت کو دعوت دینا ہے



محکمہ تحفظ ماحول و موسمیاتی تبدیلی
حکومت پنجاب



ڈرون کیمروں سے فصلوں کی باقیات
جلانے کی مانیٹرنگ کی جائے گی



محکمہ تحفظ ماحول و موسمیاتی تبدیلی
حکومت پنجاب



Lahore Implements a Green Lockdown to Combat Smog



MONITORING MECHANISM & ACTION TAKEN- WASTE BURNING

LOCAL GOVERNMENTS
for efficient service delivery

بلدیہ مستحکم پنجاب مستحکم

Logout Notifications Data Entry Performas Particulars of Deceased LGwise List Datewise List Field Offices Reports Map Viewer

Corona Safety Measures: LG Income/Expenditure **Anti SMOG Activities**

Anti SMOG Activities by LGs

Division: District:

LG Name:

Anti SMOG Activities List & Entry Status

Details of Activities:	
Reporting Date	Tuesday, August 26, 2025
Number of actions taken against burning of solid waste / tyres , rubber, plastic etc..	Warnings / Notices <input type="text"/> Nos. Fine (Cases) <input type="text"/> Nos. Fine (Rs.) <input type="text"/> Pak Rs. FIRs <input type="text"/> Nos. Arrests <input type="text"/> Nos. Challans / Istaghasa <input type="text"/> Nos.
Number of encroachments/structures, rehri/khokhas etc. removed	Warnings / Notices <input type="text"/> Nos. Fine (cases) <input type="text"/> Nos. Fine (Rs.) <input type="text"/> Pak Rs. FIRs <input type="text"/> Nos. Arrests <input type="text"/> Nos.
Number of roads/streets sprinkled before sweeping	<input type="text"/> Nos.
Total Length covered for sprinkling	<input type="text"/> Km.
Number of actions taken against Tree Cutting & erection or demolition of any building - S(26) of 8th Schedule	<input type="text"/> Nos.
Number of trees planted	<input type="text"/> Nos.
Number of activities to control fugitive dust	Sprinkling <input type="text"/> Road Shoulders repaired/constructed <input type="text"/> Uncovered/Open Storage of Construction Material <input type="text"/>
Total No. of Awareness Activities Performed	<input type="text"/> Nos.
Efforts for awareness	<input type="checkbox"/> Cable <input type="checkbox"/> Pamphlet/Banners/Hoardings <input type="checkbox"/> Walks/Seminars <input type="checkbox"/> Social Media <input type="checkbox"/> PrintMedia

Save

LG wise Reporting - Anti Smog Activities by Waste Management Companies across the Punjab From 8 March, 2023 to Till Date							
Sr.	WMC Name	Actions taken against burning of solid waste / tyres , rubber, plastic etc..					
		Warnin gs / Notices	Fine	Fine (Rs.)	FIRs	Arrests	Challan/Ist aghasa
1.	BWP Waste Management Company	1013	0	0	0	0	0
2.	DGK Waste Management Company	947	0	0	0	0	0
3.	FSD Waste Management Company	2148	1349	1312200	0	0	468
4.	GRW Waste Management Company	0	0	0	0	0	0
5.	SKT Waste Management Company	0	0	0	0	0	0
6.	LHR Waste Management Company	19302	7117	14824300	1629	0	3143
7.	MTN Waste Management Company	652	0	0	30	0	0
8.	RWP Waste Management Company	0	72	61000	0	0	0
Total		24062	8538	16197500	1659	0	3611

IMPACTS & ACTION TAKEN - WASTE BURNING



CHIEF MINISTER PUNJAB'S ROADMAP FOR SMOG MITIGATION IN PUNJAB

2024-2025

Smog Mitigation Actions (March - September 2024)



#SMOGLSSLAHORE



042-99204408

No. Smog / 2024 / 70 / Dir. South
PROVINCIAL DISASTER MANAGEMENT AUTHORITY
152-B, Noon Avenue, New Muslim Town, Lahore
Dated the 26th October, 2024

To

1. All Administrative Secretaries in the Punjab.
2. Addl. IGP Traffic, Punjab.
3. All the Commissioners in Punjab.
4. All the Deputy Commissioners in Punjab.

Subject:-

DECLARATION OF SMOG AS CALAMITY AND NECESSARY ACTIONS FOR MITIGATION OF SMOG

Kindly refer to the subject noted above and Government of the Punjab Notification No. Smog-2020/10/Coord-1, dated 14-10-2020 wherein Smog has been declared as "Calamity" under Section 3 of the Punjab National Calamities (Prevention and Relief) Act, 1958 in the entire Province of Punjab (copy attached). All the following activities causing or leading to smog formation have been banned across the province. The Deputy Commissioners have been delegated the powers of the Relief Commissioner to take all necessary measures to control and mitigate smog (Copy Attached).

- i. Burning of any type of crop residue.
- ii. Vehicles emitting visible smoke and pollutants falling into inadmissible limits.
- iii. All industries working without emission control system contributing deterioration in Air Quality Index.
- iv. All stone crushers operating without wet scrubbers.
- v. Burning of all types of solid waste, tyres, rubber and plastics.
- vi. Sale and use of all types of sub-standard fuels.
- vii. All types of encroachments which cause hindrance in the smooth flow of traffic on public roads including footpaths.
- viii. Any kind of parking which may cause hindrance in the smooth flow of traffic.
- ix. All types of activities without proper safeguard which contribute in generating fugitive dust.



فضائی آلودگی بوجہ فصلوں کی باقیات جلانا

1 فصلوں کی باقیات جلانے کا سموگ سے گہرے تعلق ہے اس کے علاوہ باقیات کو جلانے سے نکلنے والی کاربن ڈائی آکسائیڈ اور بننے والی کاربن کے ذرات سموگ کے ساتھ ساتھ فضائی آلودگی اور گلوبل وارمنگ کا باعث بھی ہے۔ ایک ٹن (1000 کلوگرام) فصلوں کی باقیات جلانے سے 1450 کلوگرام کاربن ڈائی آکسائیڈ بن جاتے ہیں۔ گلوبل وارمنگ (P.M2.5) اور 5.4 کلوگرام پیک ذرات (PM10) ڈائی آکسائیڈ 6.6 کلوگرام مونو ذرات میں کاربن ڈائی آکسائیڈ کا 60% حصہ ہے۔ فوگ کے موسم میں ہوا میں سائیکسٹریٹس اور فصلوں کی باقیات کی جلائی گئی ہے اور پتھر ہوتی ہے جس سے آلودگی اور سموگ کے گردنوں میں شدید سموگ کا سامنا کرنا پڑتا ہے۔

2 فصلوں کی باقیات جلانے سے سموگ کی شدت میں بہت زیادہ اضافہ ہوتا ہے۔ انسانی صحت اور پودوں / فصلوں کو نقصان پہنچاتا ہے۔ پودوں کا کئی مطلوبہ روشنی نہ ملنے سے انکی نشوونما رک جاتی ہے۔ شہر اڑھیں بند ہو جانے سے ہر قسم کی ترسیل بھی بند ہو جاتی ہے اور روزمرہ کے معاملات ٹھپ ہو کر رہ جاتے ہیں۔ بچوں اور بزرگوں کے لیے سموگ انتہائی خطرناک ہے۔

3 فصلوں کی باقیات جانا انسانوں میں سرگرمیوں میں شامل ہے اور انسانی بنیادی حقوق کی خلاف ورزی ہے۔

4 فصلوں کی باقیات کو مت جلائیں اور انسان دوست ماحول کو بحال کریں



حکومت پنجاب
محکمہ تحفظ ماحول و موسمیاتی تبدیلی



Regional Dialogue on Transformative Action to
End Open Burning of Waste in South Asia



The Urban Unit
Planning & Development Board, Punjab



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INTERVENTION IN CURRENT WASTE MANAGEMENT SYSTEM FOR EFFECTIVE SOLID WASTE MANAGEMENT IN PAKISTAN

• Formation of Solid Waste Management Companies

- **Punjab:** 10 Waste Management Companies are working at the Divisional level
- **Sindh:** KW&SB is looking after solid waste management services
- **KPK:** Water and Sanitation Companies are working
- **Balochistan:** Local Government through Metropolitan Corporation

• Outsourcing of Solid Waste Management Services – Increase collection efficiency

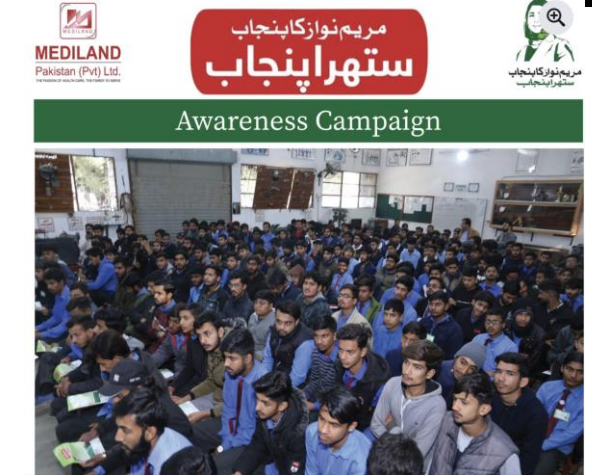
- **Punjab Province** – Local Contractors under Suthra Punjab Initiative
- **Sindh** - Chinese Contractor is providing waste collection and Transportation Services
- **Balochistan:** Quetta, outsourcing is carried out for waste management services
- **KPK:** Managing their waste through Water and Sanitation companies



INTERVENTION IN CURRENT WASTE MANAGEMENT SYSTEM FOR EFFECTIVE SOLID WASTE MANAGEMENT IN PAKISTAN

- **Development of Material Recovery Facilities**
 - **Punjab:** Lahore, Sahiwal, Faisalabad, Gujranwala
 - **Sindh:** Karachi, Hyderabad (Polyethylene Plastic Recycling Plant)
 - **KPK:** Mardan (IRCC), Kohat Integrated Waste Management Facility
 - **Balochistan:** Quetta
- Development of Controlled Waste Disposal Site/ Sanitary Landfill Site
- Local Governments develop a mechanism to penalize citizens for burning waste (trash, tires, hazardous waste)
- Ban on single-use plastic and the development of plastic cell by the EPA, Punjab
 - Promote 3Rs and register waste recyclers
- National Policy on the circular economy – under process
- Awareness Campaigns for citizen behavioral change

RAWALPINDI: The Rawalpindi district administration has imposed a ban on the burning of trash, tyres, plastic, shoes and raw wood in all brick kilns across the district.



THANK
YOU



The Urban Unit

Planning & Development Board, Punjab

