आज़ादी का अमृत महोत्सव

Gujarat Pollution Control Board

सूरत महानगर पालिका
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EFFECTIVE IMPLEMENTATION OF SURAT CLEAN AIR ACTION PLAN THROUGH INNOVATIVE PRACTICES

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PREFACE

The Surat Clean Air Action Plan (SCAP) was prepared as part of the National Clean Air Programme, an initiative by the Ministry of Environment, Forest and Climate Change to improve the country's air quality on a war footing. SCAP was developed by WRI India in collaboration with Surat Municipal Corporation and Gujarat Pollution Control Board with support from Bloomberg Philanthropies and Shakti Sustainable Energy Foundation. The SCAP report has been an outcome of several one-to-one meetings, emissions inventory & source apportionment study by TERI, primary surveys, and a series of stakeholder consultation workshops, etc.

Effective implementation is the most critical aspect of the Clean Air Action Plan. Surat Municipal Corporation and Gujarat Pollution Control Board, Surat with the help of WRI-India have started to successfully implement all aspects of the Surat Clean Air Action Plan in timebound actions through micro-planning and by following protocol suggested under the NCAP framework.

Some of the innovative practices carried out for the effective implementation of the Surat Clean Air Action Plan are targeting construction dust mitigation through clean construction practices in Surat, minimizing open waste burning, setting up of AQM cell for effective monitoring of SCAP activities, promoting sustainable and zero vehicular emissions from public transport, etc. With this booklet, all these innovative practices for the effective implementation of CAP have been shared.

CONTENT

CONTEXT: SURAT CLEAN AIR ACTION PLAN (SCAP)

The Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India, launched the National Clean Air Programme (NCAP) as a long-term strategy to tackle the air pollution problem across the country in a comprehensive manner, with targets to achieve 20-30% reduction in PM2.5/10 concentrations by 2024, keeping 2017 as the base year. Under NCAP, 124 non-attainment cities have been identified across the country, which did not meet the National Ambient Air Quality Standards (NAAQS). In the state of Gujarat, the cities Ahmedabad, Surat, and Vadodara, identified as non-attainment cities had to develop a city-specific clean air action plan with proposed interventions to reduce emissions in a timebound manner.

The SCAP intends to improve air quality and public health by identifying cost-effective measures to reduce emissions from individual sources.

The key features of SCAP include:

- A clear understanding of emission levels and contributing sectors.
- Instruments and strategies for each sector to comply with locally acceptable and mandated air quality and emission standards.
- Adoption and implementation of control measures that can be assessed once the compliance nature of air quality standards has been measured.

SCAP APPROACH- DESIGN STRATEGIES AND IMPLEMENTATION

- **Literature Review** to identify air pollution sources.
- **Identification of Air Pollution Sources and Activities** to prepare the study framework integrating city-specific air pollution source characteristics.
- **Consultations with stakeholders** associated with contributing sectors.
- Extensive **Collection of secondary and primary data.**
- City & district level **Emissions Inventories and Source Apportionment**
- **Comprehensive Assessment of air pollution** for sector-based interventions based on existing programs and policies.
- **Scenarios on** possible growth and implementing various proposals
- **Experts Review** from different strata of expertise.

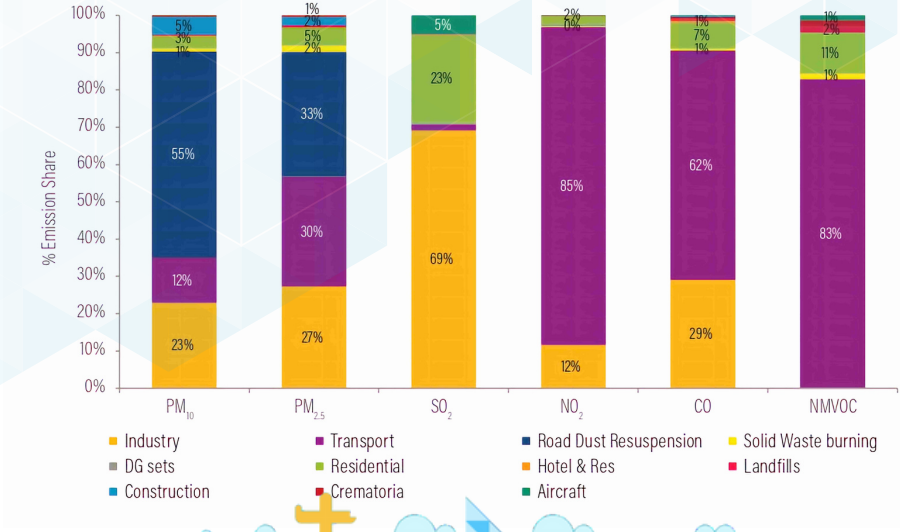
SCAP FINDINGS

In the SMC area, using an activity and emission factor-based approach a multipollutant emission inventory was developed for year 2019.

Pollutant	PM10	PM2.5	SO2	NOx	CO
Emission Load (kt/year)	35.5	14.3	5.23	38.59	139.5

SECTORAL CONTRIBUTIONS

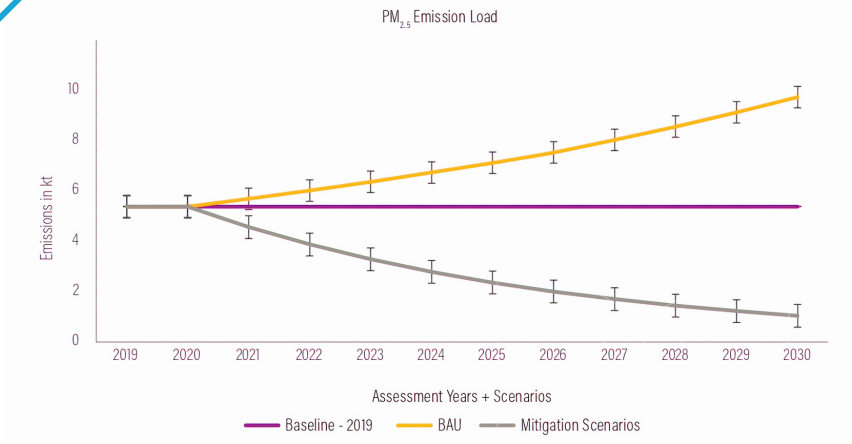
Major contributors to PM2.5: road dust resuspension, transport, and industries



SOME MITIGATION SCENERIOS- SCAP

Sr. No.	Proposed Policy or Criteria	Duration
A	**Residential Cooking Sector**	
1	Community awareness (LPG cylinder stickers)	2021- 2025
2	Go kerosene-free	2021- 2025
3	Promotion of induction stoves/electricity	2021-2022
4	Expansion of PNG network	2021-2030
B	**Construction Sector**	
5	Preparation and implementation of Ambient Air Quality Monitoring Plan	2021- 2025
6	Development of construction sector-specific monitoring toolkit	2021- 2025
7	Creation of pilot site with best practices	2021- 2025
C	**Open Municipal Solid Waste Burning Sector**	
8	Decentralized waste to compost plant	2021-2030
9	Waste recovery facility	2021-2030
10	Awareness program	2021-2023

Sr. No.	Proposed Policy or Criteria	Duration
D	**Industries Sector**	
11	Retrofitting air pollution control devices	2021-2023
12	Implementing capacity building module	2021-2023
13	Shifting towards alternative fuel	2022-2030
E	**Eateries Sector**	
14	Inventorization of eateries	2021-2023
15	Shift to cleaner fuel	2021-2030
F	**Transportation**	
16	Systemic transition of vehicles to cleaner and more efficient vehicles	2021-2026
17	The incentive structure for faster to more efficient and cleaner vehicles	2021-2030
18	Implementation of Electric Vehicle (EV) policy	2021-2024
G	**Non-Exhaust Emissions**	
19	Recognition of NEE restricted zones	2021-2030
20	Installation of fogging machines and sprinklers at the major junctions	2021-2025



Business-as-usual (BAU) Vs mitigation scenarios projections for PM2.5 for all sectors

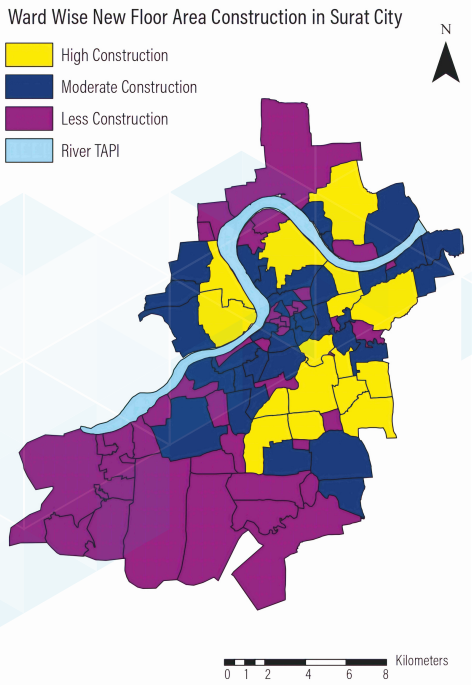
WAY FORWARD

- Implementation of strategies will require existing and new public-/private-sector partnerships.
- A steering committee must be formed to monitor the progress and implementation.
- Surat City level Air Quality Monitoring Cell (AQM cell) must be established.
- IEC plan and its activities must be developed.

INNOVATIVE PRACTICE 1: CLEAN CONSTRUCTION PRACTICES IN SURAT

Estimation of major hotspots of recently constructed new floor area for microplanning, using data from:

- National Sample Survey Organisation (NSSO) and
- Census of India



Wards having upcoming construction:

Pal, Adajan, Kataargam, Piplod, and Vesu

STAKEHOLDER WORKSHOP

Participation from SMC, GPCB, Confederation of Real Estate Developers' Associations of India (CREDAI) Surat, and WRI India

Construction sector's stakeholder workshop for discussion on opportunities and barriers in clean construction adoption

HANDBOOK OF CLEAN CONSTRUCTION PRACTICES IN SURAT

Based on stakeholders' consultation, WRI India in collaboration with SMC, GPCB, CREDAI, Shakti Foundation, and Bloomberg Philanthropies developed the "Handbook of Clean construction practices in Surat" and released it in November 2020.

Launch of Handbook of Clean Construction Practices in Surat

AIR POLLUTION MITIGATION STRATEGY

The SCAP and clean construction Handbook discusses reduction of air pollution at construction sites through:

a. **Air quality monitoring** to assess air polluting activities and the impact of mitigation measures.

b. **Engineering controls** including onsite mitigation measures, e.g., water sprinkling during high air pollution generating activities.

c. **Administrative management controls**, such as setting up a **clean construction pilot site**.

CLEAN CONSTRUCTION PILOT

Development of pilot sites, prior to large-scale implementation of mitigation measures is critical for the Justification of mitigation measures' viability in specific local conditions and exploration of their true reduction potential. Training of concerned stakeholders can also be done on these pilot sites.

In May 2022, WRI India in collaboration with SMC, GPCB, CREDAI Surat, Sangini group, and Bloomberg Philanthropies launched a pilot site at Sangini Skyteria in Vesu.

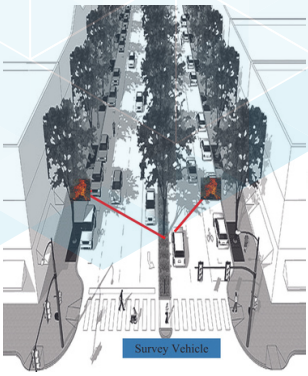
INNOVATIVE PRACTICE 2: EFFECTIVE STEPS TO MINIMIZE WASTE BURNING IN SURAT

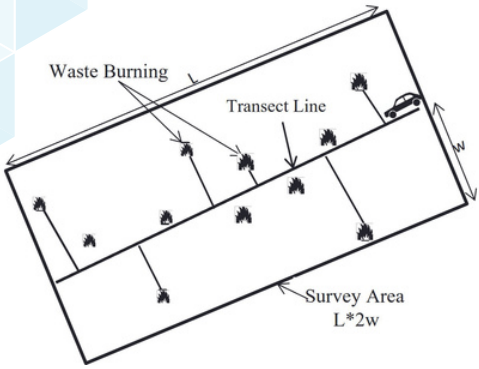
BARRIERS IN IMPLEMENTATION

In urban areas of the country, due to the unavailability of primary input data, emissions from open waste burning were mostly based on assumptions, with limited primary data. This practice without consideration of local factors gives uncertain results and is responsible for fallacious policy recommendations.

INNOVATIVE INTERVENTION TO INPUT DATA GENERATION

Primary data on waste burning incidents in the SMC areas was collected by conducting field surveys using an innovative **"Transect Walk Method"** to address these gaps in primary data.



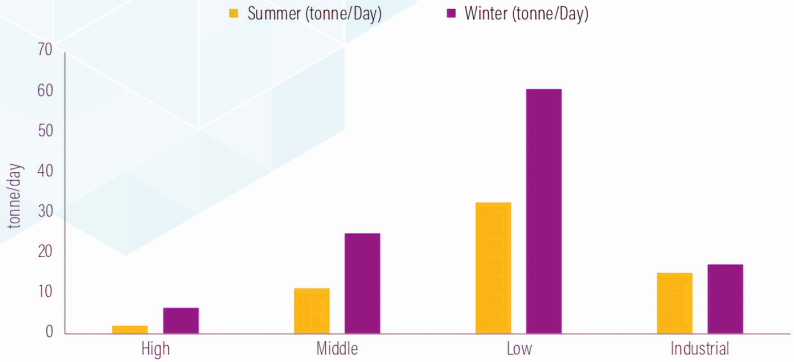


TRANSECT ROUTES

The transect routes were laid out into different streets and roads of each zone (covering 54 wards of the SMC), representing the survey area's SES and land-use characteristics. Transect routes were covered in morning and evening hours for three consecutive days during the winter (January 2020) and summer (June 2019) seasons.

SURVEY FINDINGS

Data on the frequency of waste burning incidents is estimated and measured spatially with respect to the composition and volume/rough mass of the waste burnt for the neighborhood and extrapolated to the entire surat city.



Daily incidents of MSW burning in four areas (high SES, medium SES, low SES, and industrial) within the SMC area during the winter and summer seasons

INITIATIVES BY SMC TO CONTROL OPEN WASTE BURNING

- Prohibition/complete ban on open solid waste burning under the Public Health By-Laws of SMC.
- Launch extensive drive to check and control of open burning of solid wastes by the public in the hot spot areas.
- Defaulters for open burning have been imposed fines of Rs 500 under the Public Health Bye-Laws of SMC.

IEC SUPPORT

Lack of awareness among people was identified as a problem by both WRI India and SMC, thus WRI India is supporting SMC by designing the IEC material in the form of posters, wall mural/painting designs. These designs are being used by SMC for their mass awareness campaign.

Poster Designs for SMC's awareness campaigns

Wall Mural Designs for SMC's awareness campaigns

CAPACITY BUILDING

WRI India has proposed to conduct the capacity building/ training session for the Sanitation Inspectors of Surat Municipal Corporation. The sessions will inform the sanitation inspectors about the issues of open waste burning and its environmental and health implications and prepare them for their role in the reduction of these incidents in surat.

INNOVATIVE PRACTICES 3: ESTABLISHING AIR QUALITY CELL AND MAINTAINING MIS FOR BETTER IMPLEMENTATION OF CAP

In Surat, the city-level implementation committee was formed under the chairmanship of the Municipal Commissioner of SMC and Regional Office- GPCB, Surat as member secretary of the committee. Other members are the Regional Transport Office, Deputy Commissioner Police (Traffic), District Supply Office, and District Industries Centre. WRI India is part of this Implementation committee as co-opt member/subject expert.

MICRO ACTION PLAN

The Central Pollution Control Board introduced documentation of the physical and financial progress of the activities initiated to reduce air emissions and expenses incurred at the ULB level. WRI India supported SMC in the collation of information for compliance and timely completion of the Micro Action Plan for Surat.

HEALTH RISK ASSESSMENT

Ambient fine particulate matter (PM2.5) is a major risk factor for ill health and death. PM2.5 exposure assessment and subsequent economics have been evaluated under SCAP. The data helps the authorities in setting regulatory policies.

HOT SPOT IDENTIFICATION

The sectoral micro-planning and mitigation measures identification is the need of the hour, but there should be an equal focus given to hot spot identification. Hot Spot identification is a necessary tool as the levels of pollution and its nature differ from place to place within the city. The sector-specific hot spots were identified under SCAP.

PUBLIC OUTREACH AND AWARENESS

WRI India supports SMC on various public outreach and mass awareness on air pollution issues. WRI India has also organized several workshops in Surat to discuss the sector's air emission challenges and the identification of appropriate and cost-effective mitigation measures.

Celebration of "International Clean Air Day for Blue Skies 2022"

CAPACITY BUILDING

Capacity building exercises in SMC area by initiatives on air pollution in general as well as govt officials.

CAAQM TECHNICAL ASSESSMENT

As a Third-Party Inspection (TPI) agency, WRI India technically supported the installation Continuous Ambient Air Quality Monitoring System (CAAQMS).

INNOVATIVE PRACTICE 4: SUSTAINABLE AND ZERO VEHICULAR EMISSION FROM PUBLIC TRANSPORT BY 2025

Surat city EV policy 2021 set up the vision **"To envisage Surat as leading EV Smart City in Country First EV smart City"** as part of the Smart City Program, Solar City Program, and Surat Clear Air Action Plan With the major goal of creating sustainable and zero vehicular emissions from Public Transport by 2025.

The Surat EV Policy 2021 has the following major tasks for minimizing vehicular emissions.

- Development of **Public/Private EV Charging Station infrastructure.**
- Promoting the **adoption of Electrical Vehicles (EVs) in SMC**.
- **Database** of public and private **EV charging stations**.
- **Start-up and innovation** in EV Sector.
- **Information, Education, and Communication (IEC)** activities to create awareness.

MINIMISING VEHICULAR EMISSIONS

Surat City aims to be the first EV Smart city in the country and therefore, SMC is targeting to facilitate adoption of at least 20% EVs in the targets set in State EV Policy during the operating period of this policy.

Type of EVs	Number of EVs presently in Surat City	State's target in State EV Policy Period	SMC's target in City EV Policy Period
2 W	796	1,10,000	20,000
3 W	52	70,000	15,000
4 W	105	20,000	5,000
Buses	54	-	300
Total	1007	2,00,000	40,300

INCENTIVES BY SMC TO PROMOTE EV

Vehicle Tax Exemption benefit:

- 100% exemption in vehicle tax for all the electric vehicles registered in Surat city for the first year from the date of inception of this policy.
- 75% exemption in vehicle tax for all-electric vehicles registered in Surat city during the second year of this policy. The incentive of 50% exemption in vehicle tax for all the electric vehicles registered in Surat city from the third year onwards of this policy.

Rebate in Environment Improvement Charge:

- SMC will reimburse 100% Environment Improvement Charge to all EV owners for the first 3 years.

Parking Slots in SMC's Pay & Parks locations:

- To support the EV ecosystem, EV owners will be provided parking at no cost to SMC's Pay & Parks locations for three years from the date of inception of this policy.

TARGET FOR SUSTAINABLE AND ZERO VEHICULAR EMISSIONS FROM PUBLIC TRANSPORT

SMC has its own Surat Sitilink Ltd which runs city buses and BRTS. It operates about 250 Bus Rapid Transport System (BRTS) buses and 500 city buses, a total of 750 buses every day to cater for 250,000 passengers every day.

EV ADOPTION

SMC in collaboration with BRTS/Traffic cell aims to adopt EVs mobility in public transport. Surat Sitilink Ltd has planned to adopt EVs mobility in a phased manner.

Year	Cumulative Target No of E-Bus in the policy period (nos.)
2021	75
2022	150
2023	250
2024	300

At present 45 E-buses are already operationalized and about 255 will be operationalized before the end of this financial year.

PROJECT FUNDING

Public Transport (BRTS and city bus) in Surat functions in PPP mode on Gross Cost Contract (GCC) model. The state government is providing a subsidy of Rs.12.50 per km per day per bus for diesel/CNG buses and Rs.25 per km per day per bus for E-buses to SMC under the Viability Gap Funding scheme, known as Chief Minster Urban Bus Service. SMC also gets funding under the FAME-2 scheme of the Government of India..

PROJECT BENEFIT

SMC is taking measures to urge commuters to transition from privately owned vehicles to public transport vehicles, which will help reduce air quality concerns with the co-benefit of reducing congestion and improving productivity. SMC's target is to shift 100 % fleet to EVs by 2030. The increased mode share in public transport resulting from the abovementioned strategies will enable a 25% reduction in the total passenger vehicle ownership in the city in 2025-26.

About Surat Municipal Corporation

Surat Municipal Corporation is the local civic body responsible for the administration of Surat city in Gujarat which was established on 2 October 1966. Surat Municipal Corporation has an area of 462.149 sq km. It carries out all the obligatory functions and discretionary functions to make Surat a dynamic, vibrant, self-reliant, and sustainable city with all basic amenities to provide a better quality of life.

About Gujarat Pollution Control Board

The Gujarat Pollution Control Board (GPCB) was established on 15 October 1974 by the Government of Gujarat to protect the environment, prevent and control the pollution of air, soil and water in the State of Gujarat, that occupies a prominent niche in progressive and industrial development of the country. The Board has been over the years entrusted with the Central Acts and relevant Rules for pollution control as notified thereof from time to time. GPCB has its Head Office in Gandhinagar, Gujarat and 27 Regional Offices spread all over the state.

About Bloomberg Philanthropies

Bloomberg Philanthropies is a philanthropic organization that encompasses all the charitable giving of founder Michael R. Bloomberg. Bloomberg Philanthropies works to ensure better, longer lives for the greatest number of people by focusing on five key areas: the arts, education, the environment, government innovation, and public health. Encompassing all of Mike Bloomberg's giving, Bloomberg Philanthropies includes his foundation, corporate, and personal philanthropy as well as Bloomberg Associates, a pro bono consultancy that works with mayors in cities around the world.

About WRI India

WRI India is a research organization that turns big ideas into action at the nexus of environment, economic opportunity and human well-being.WRI India is a research organization with experts and staff who work closely with leaders to turn big ideas into action to sustain a healthy environment—the foundation of economic opportunity and human well-being. We envision an equitable and prosperous planet driven by the wise management of natural resources. It has offices in Delhi, Mumbai and Bangalore and small project offices in several cities in India.

NOTES: