

MOBILITY SOLUTIONS FOR CLEAN AIR ACTION PLANING

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CLEAN AIR
ASIA



About Clean Air Asia



Clean Air Asia is an international NGO that works towards **achieving better air quality and livable cities by translating knowledge to policies and actions that enable Asia's 1,000+ cities to reduce air pollution and greenhouse gas emissions from transport, energy, other sectors.**

Air Quality and Climate Change

Key component: Guidance Framework for Better Air Quality in Asian Cities

Sustainable Urban Transport

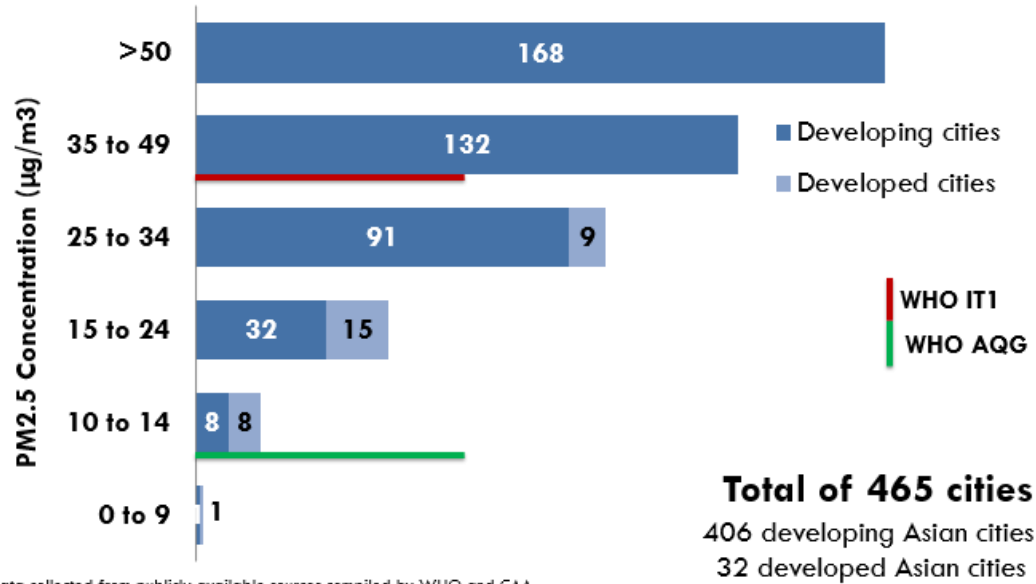
Clean Air Asia offers its partners:

- **Actionable guidance** for administrators and policymakers
- **High-level expertise** in air quality management
- **An ethos of partnerships, collaboration, and cooperation** as key drivers for meaningful and lasting change

Lower Emission Urban Development

Clean Air Asia's country networks: China, India, Indonesia, Nepal, Pakistan, Philippines, Sri Lanka, Vietnam and Malaysia

State of Air Quality



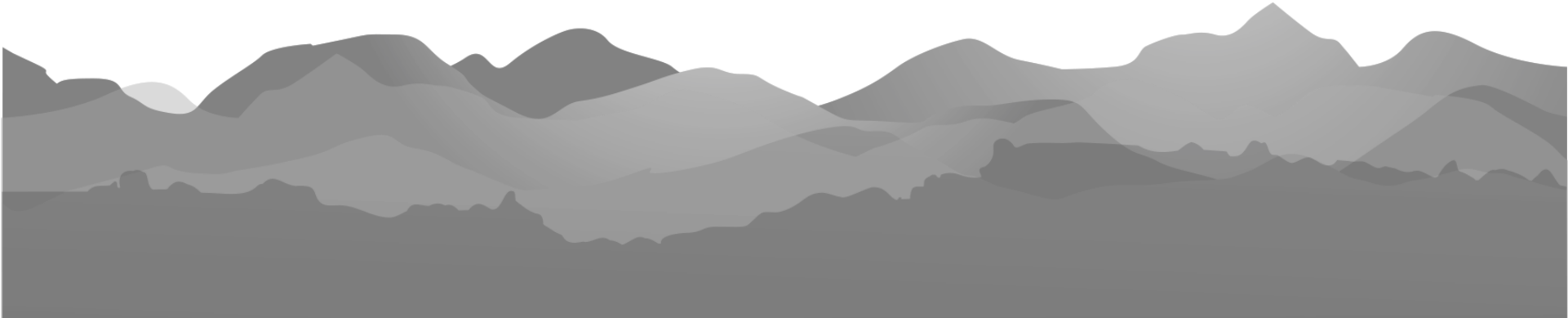
Data collected from publicly available sources compiled by WHO and CAA.
 Data for the last available year in the period 2012-2016
 Clean Air Asia, 2017

1

99% of cities in Asia
 with unhealthy air quality levels
 (PM2.5 levels above
 WHO Air Quality Guideline
 (463 of 465 cities in the survey))

2

35% of cities with PM2.5 levels
 within WHO Interim Target I
 (165 of 465 cities)



MOBILITY PLANNING IN CLEAN AIR ACTION-
ASSESSMENT+PLANNING +INTEGRATION



WHAT IS A CLEAN AIR ACTION PLAN?



INTERVENTIONS IN POLICY AND PUBLIC
ENGAGEMENT



CLEAN AIR SCORECARD TOOL (CAST)

Air Pollution and
Health Index
(APHI)



Clean Air Management
Capacity Index
(CAMC)



Clean Air Policies
and Actions Index
(CAPA)

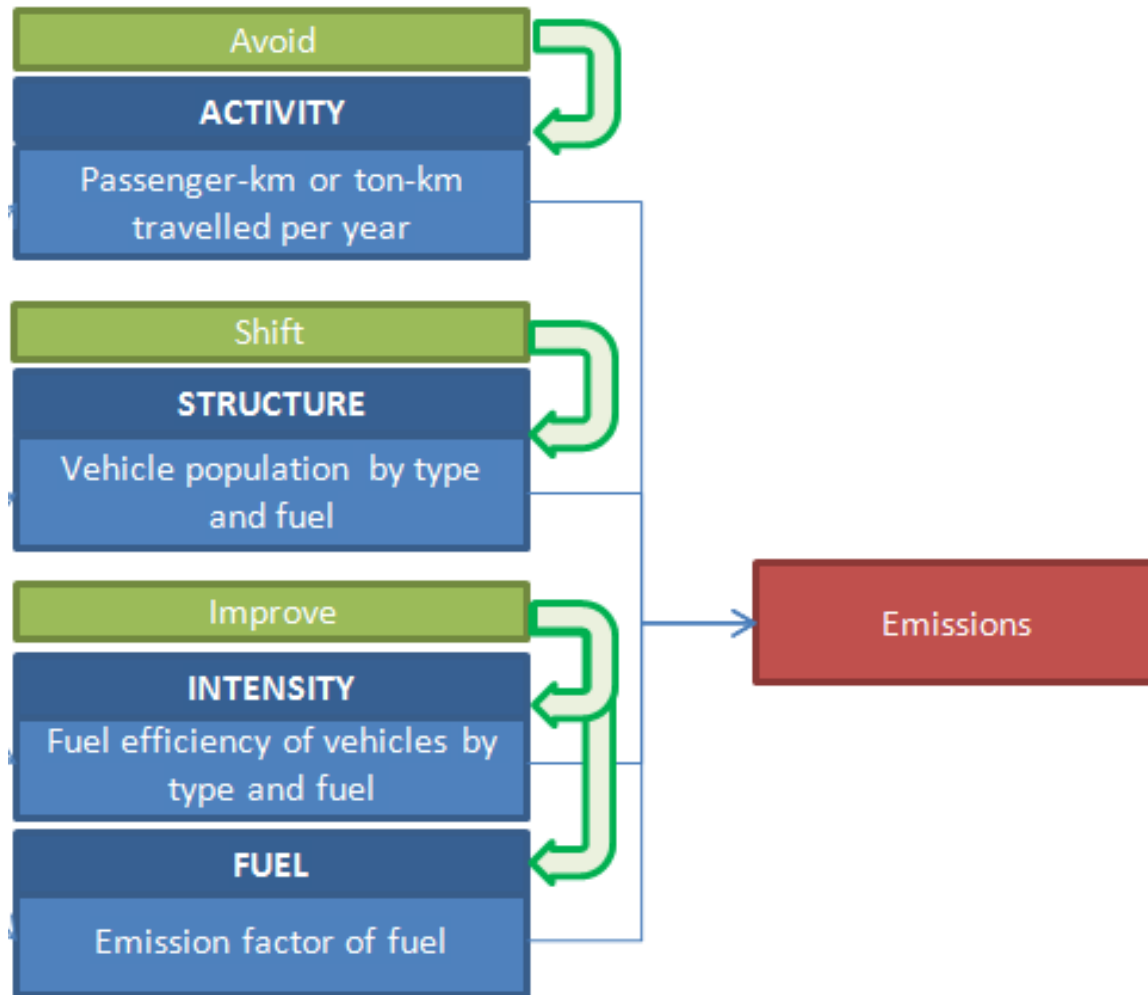


OVERALL Clean Air Score



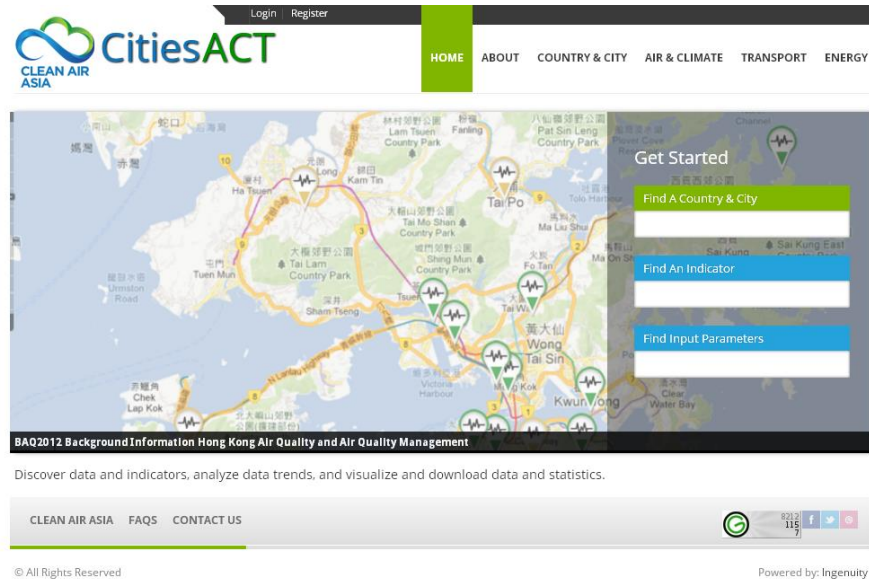
- **The Air Pollution and Health Index** assesses air pollution levels of cities against WHO guideline values and interim targets
- **The Clean Air Management Capacity Index** assesses a city's capacity to (i) determine sources of emissions and their contribution (through an emissions inventory), (ii) assess the status of air quality (includes monitoring, modelling, data analysis and reporting), (iii) estimate impacts on health, environment and economy, (iv) reduce air pollution and GHG emissions through an institutional and policy framework and financing
- **Clean Air Policies and Actions Index** assesses the existence and enforcement of national and local policies and actions to address air pollutants and GHG emissions from mobile, stationary and area sources

Understanding AQM capacity and status:
Transport Emissions Evaluation Models for Projects (TEEMP)



Existing tools and databases: CitiesACT

www.citiesACT.org



CitiesACT database on air quality levels, CO₂ emissions, transport and energy data and indicators for 250 Asian cities and 22 countries. Users can search by location, topic, and create online charts and figures

Main data source for WHO Outdoor Air Pollution in Cities database (www.who.int/phe/health_topics/outdoorair/databases/en/)

Countries & Cities

- Population (total, percent urban, electricity access)
- GDP
- Number and list of mega-cities

Air Quality & Climate Change

- Air quality standards
- Air quality data (PM10, SO₂, NO_x)
- Monitoring stations
- Air pollution and CO₂ indicators

Transport

- Emissions standards
- Fuel quality standards
- Fuel economy standards
- Road transport emissions total and per capita, GDP, passenger km and freight, vehicle type, vehicle-fuel type
- Motorization index
- Transport statistics

Energy

- Emissions from electricity generation by source type, kWh
- Emissions from electricity consumption by end-use sector, GDP, capita
- Energy statistics



Priority areas of AQM

Setting and strengthening AAQS to; ensuring sustainable AQ Monitoring

Developing and updating emissions inventories and modeling

Linking AQ levels with health and other impacts and corresponding costs

Communicating air quality, health and co benefits

Developing and implementing CAAPs

Governance approaches in air quality management

Guidance Areas

• Guidance Area 1: Ambient Air Quality Standards and Monitoring

• Guidance Area 2: Emissions Inventories and Modeling

• Guidance Area 3: Health and Other Impacts

• Guidance Area 4: Air Quality Communication

• Guidance Area 5: Clean Air Action Plans

• Guidance Area 6: Governance



Overall Clean Air Score

Category	Score Band	Description
Fully Developed	81 - 100	Key components of clean air management complete. Strong mandate for air pollution and GHG management and strong sector-based and integrated policies, regulations and institutions to address major sources of pollution (e.g., transport, industry, energy and area sources). Policies and actions contribute to achieving levels equivalent to prescribed WHO guidelines and interim targets for air pollution.
Maturing	61 - 80	Key Components of clean air management complete and some integration with other major sectors (e.g., transport, health and energy sectors). Policies and actions have achieved some success in reducing AP/GHG emissions but air quality levels still exceed healthy levels prescribed by the WHO. Management efforts in all sector sources need to be intensified to bring down emissions further.
Emerging	41 - 60	Majority of key components of clean air management are in place. Policies and actions to reduce emissions from identified major sources need to be enhanced. Sector-based institutions need to upgrade technical and management capacity.
Developing	21 - 40	GHG and AP emissions are increasing and air quality declining. Clean air management activities are scattered in different organizations with limited collaboration. Needs to invest in strengthening components of basic air quality management and collaboration between stakeholders.
Underdeveloped	1 - 20	Ad hoc clean air management; lack in emissions and ambient air quality standards; Needs to build capacity for basic air quality and GHG emissions management.

Guidance Framework for Better Air Quality in Asian Cities

What (Process)	<ul style="list-style-type: none">• Cost-effective strategies• Emission reduction
How (Instruments)	<ul style="list-style-type: none">• To comply with standards• Adopt control measures
Who (Implementers)	<ul style="list-style-type: none">• Government-led• Stakeholder engagement• Public participation

What is an Clean Air Action Plan (CAAP)?

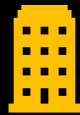
Clean Air Action Plan – Marikina City, Philippines (as of April 2019)



Relocate the DLC/
GJC Toda Barangka
tricycle terminal and
prohibit the loading/
unloading by PUV-FX
at Gen. J. Cruz St.



Review and update
the City's
Sustainable Urban
Mobility Plan
(SUMP)



Conduct capacity
building on air
quality management



Conduct IEC
campaigns on AQM
measures



Integrate air quality
monitoring as part
of the city's
environmental
initiatives and
consistent its
development and
priority thrusts



Align local efforts
with national plans
and programs



Develop a
monitoring and
evaluation (M&E)
plan on AQM

Clean Air Action Plan – Bogor City, Indonesia (as of March 2019)

	Output	Target	Indicator
Action for mobile sources	The selected action plans to reduce emissions from mobile sources are implemented	<ul style="list-style-type: none"> - Reduced emissions from the transportation sector in the city of Bogor - Improved public transportation and environmentally friendly systems in the city of Bogor - Reduced congestion intensity in Bogor City - More and more private vehicle drivers are turning to public transportation systems 	<ul style="list-style-type: none"> - Emissions from moving sources decreased reflected from EI in the base year compared to the latest EI year - Increased number and coverage of BRT services - The results of measurements of ambient air quality in cities and near highways have not passed the quality standards according to PPRI No. 41 1999

Clean Air Action Plan – Can Tho, Vietnam (as of May 2017)
 AQM Measures Summary Table

Why	Measures and Actions	Projects	Legal Responsibility	Time Period of Implementation	Costs in million (in VND)
Addressing Mobile Sources					
NO _x , VOC, CO, SO ₂ and PM ₁₀	1. Control and Reduce On-Road Vehicle Emissions: Strengthen Enforcement of In-Use Automobile Inspections and Increase Scope to Cover Motorcycles			<u>Year 2-5</u>	<u>4,140</u>
	1.1 Set up a "Vehicle Inspection Task-Force" (VITF) consisting of representatives from VR, Can Tho, VEA, and Traffic Police.	Automobile vehicle inspection under Vehicle Inspection Task-Force	Can Tho DOT	Year 2-4	240
	1.2 Elaborate and agree on "Terms of Reference" (ToR) for the VITF.				
	1.3 Inspect/check emission from motorcycles			Year 5	3,900 per 5 years
	1.4 Mobilize the VITF to test motorcycle emissions				
All key pollutants	2. Improve Can Tho's Public Transportation		Can Tho DOT	<u>Year 2</u>	<u>600</u>
	2.1 Public Transport Improvement Pilot Project	Competitive, safe, and affordable public transport system under the Re-organization of Traffic and Transport Task Force		Year 2	600
All key pollutants	3. Increased Support for/Strengthening of Sustainable Urban Mobility		Can Tho DOT, Ninh Kieu, Binh Thuy and Cai Rang districts PPC	<u>Year 2-4</u>	<u>720</u>
	3.1 Improvement of Pedestrian Facilities	Foundation for Sustainable Mobility under Task Force on Reorganization of Transport and Traffic		Year 2	240 for study
	3.2 Assessment, Design, and Implementation of a Pilot Project on Bike Sharing System			Year 2-4	480 for study (exclusive about 3,000 for bike investment)

Clean Air Action Plan Dehradun, India



Public Awareness/ Enforcement

A city- wide drive will be launched to check and curtail polluting vehicles

A public awareness campaign will be launched to inform the public about anti-idling measures, vehicle maintenance, eco-driving, use of public transport etc

Prevent parking of vehicles in non- designated areas.

Checking for fuel adulteration periodically and random checking of fuel to be initiated.

Infrastructure

Plan to be prepared for widening of busy roads and de-congestion of traffic.

Expressway/bypass and flyovers to be built to decrease vehicular congestion

Construct cycle paths

Better traffic management/intelligent traffic system to be launched for monitoring and de-congestion (Smart Traffic)

Clean/ Non motorized transport

Battery operated vehicles and e- rickshaws to be introduced.

Determination of areas that most need last mile connectivity to initiate launch.

Non-motorised transport such as bicycle sharing to be introduced.

Devise plan for bicycle sharing

Public transport to move to cleaner fuels such as CNG in a phased manner.

Why Eco Driving?

Safety: reduced road accidents; enhanced driving skills

Environmental: reduction in GHGs – e.g., Carbon Dioxide (CO₂) and other local air pollutants; reduced noise

Financial: fuel savings; lower vehicle maintenance costs; reduced road accident-related costs

Social: reduced stress for both drivers and passengers

CAA Initiatives on Eco Driving

1'M Blue (I'm Blue) Eco-Safe Driving Campaign

Eco-driving Training for Quezon City Tricycle Drivers
(2012)

Clean Fleet Management Toolkit (2010)

Coordination and Organization of the Eco-Driving
Workshop in China (2011)

Jakarta Ecodriving (2015 to present)

Bandung Ecodriving (2016)

Climate Smart Cities Assessment Framework



The Ministry of Housing and Urban Affairs has initiated Climate Smart Cities Assessment Framework for 100 Smart Cities



It is a first-of-its-kind cities assessment framework on climate relevant parameters, as well as NCAP



The objective is to provide a clear roadmap for urban areas towards combating Climate Change while planning implementing their actions including investments



Indicators prepared by ICLEI, GIZ, Clean Air Asia and NIUA

CLEAN MOBILITY INDICATORS

Indicator 1: Low Carbon Mobility

- Description: To what extent does the city show preparedness towards low carbon initiatives and climate resilience along with the stakeholders involved
- Methodology: In order to reduce its emission and control the pollution levels connected to mobility, the city must plan, initiate and implement low carbon mobility actions as per City Mobility Plan (CMP)/ Low Carbon Mobility Plan (LCMP)/ Comprehensive Traffic and Transportation Studies (CTTS) with focus on low carbon mobility.
- Benchmark: Implementation of 50% of approved DPRs (no. of projects); Updated Low Carbon Plan (if older than 5 years); Project impact assessment study; Approved CMP/LCMP integrated in Master Plan to ensure better coordination and development

Indicator 2: Low Carbon Buses

- Description: Percentage of low carbon fleet (CNG, LPG, Hybrid, Biofuels, E-Mobility) share versus the total public transport fleet (regulated and controlled by the government)
- Methodology: Since the conventional fuel burning vehicles releases enormous number of intoxicants to atmosphere, city must put efforts to introduce more reliable and efficient green public transport fleet. Public transportation fleet incorporates all state and city operated buses (no inter-city connections considered).
- Benchmark: All cities should aim to achieve at least 50% as green fleet out of total Public Transport fleet.

Indicator 3: Public Transport Ridership

- Description: Percentage increase of total Public Transport Ridership (Metro, Tram, Buses, Ferries) of city population over a period of last 5 years.
- Methodology: Under Smart City initiatives most of selected cities are planning for organized public transport system. Calculation of total percentage annual increase in total public ridership can be a governing factor to evaluate the modal shift from private transport to public transport, which in turn help tremendously to reduce emissions from the transport sector.

CLEAN AIR INDICATORS

Indicator 5: Air Quality / Clean Air Action Plan (Pollutant Monitoring, Planning and Implementation)

- Description: To what extent the city has made efforts to measure and improve the air quality and reduce air pollution.
- Methodology: Cities install monitoring stations, allocate sources and thereafter develop and implement a clean air action plan, which is regularly updated and its implementation monitored.
- Benchmark: Sensor based monitoring for measuring ambient air quality linked with ICCC, Implementation of clean air action plan including monitoring of achievements of measures

Indicator 6: Level of Air Pollution

- Description: To what extent the city has achieved national and international air quality standards.
- Methodology: Pollutants are monitored, reduced and data is available in public domain.
- Benchmark: WHO Air Quality Standards

Assessment

Availability of information for estimating vehicular emissions leading to air pollution

Processes for estimating vehicular emissions for impacts of air pollution

Capacity for estimating impact of vehicular pollution

Present results of impacts assessment for policy development purposes

Planning

Develop short-, mid- and long-term targets

Align mobility assessment planning with city/regional environmental, development or other sectoral plans

Ensure multi-stakeholder participation

Allocate financial resources

Implementation

Management processes

Institutional arrangements for conducting impact assessments

Capacity for air quality monitoring

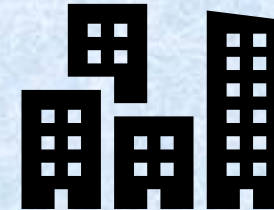
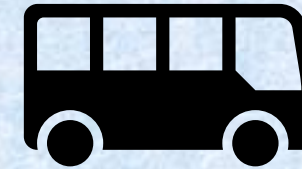
Technical processes

Adapting methods for impact assessments according to current capacity

Mobility Solutions for Air Action Plans- Process

FACTORS ENABLING SUCCESS OF CLEAN AIR MEASURES UN Solutions Report

- **Post Combustion Control**
- Industrial Process Emission Control
- **Emissions- Road Vehicles**
- **Vehicles Maintenance**
- Dust Control
- Agricultural Crop Residue Burning
- Residential Waste Burning
- Solid Waste Management
- Livestock Manure Management
- Nitrogen Fertilizer Application
- Prevention of Forest Fire
- Brick Kilns
- **International Shipping**
- Energy Efficiency Standards- Households/ Industry
- **Electric Vehicles**
- **Public Transport**
- Coal Mining
- Oil and Gas production
- HFCs
- Waste Water Treatment



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