



Integrated Programme for Better Air Quality in Asia (IBAQ Programme)

CITY SOLUTIONS TOOLKIT:

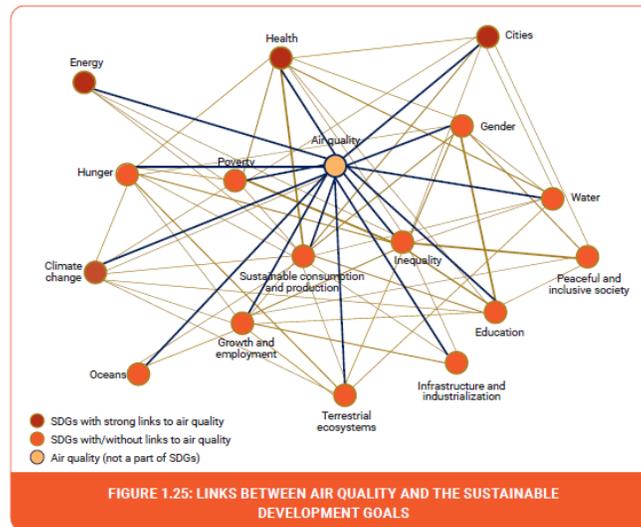
GUIDE TO MAINSTREAMING AIR QUALITY IN URBAN DEVELOPMENT

THE SITUATION

Mainstreaming air quality in a city's urban development can be understood as operating on two levels: (1) integrating air quality management (AQM) into governance, institutional arrangements, and processes and (2) including air quality goals and considerations in the city's overall development goals, performance indicators, and plans.

Mainstreaming hinges on the understanding of sustainable development – that the economic, social and environmental aspects of development are not contrary to each other, but rather, are mutually reinforcing. Comprehensive cost-benefit analyses of AQM strategies in Asia show findings supporting this. For example, a study by Crane and Mao (2015) in China generated rough estimates of potential costs in adopting extensive pollution reduction. Though they did not investigate the impact of each policy on urban air pollution, their results showed that the benefits of implementing pollution control policies were three times that of the cost.

Poor air quality and climate change-related impacts have been shown to limit the progress of sustainable development. Although there are no direct sustainable development goal (SDGs) relating to air quality, there is a strong linkage between air pollution sources and their negative health and environmental impacts with a number of SDGs (see Figure below). These linkages are due to fact that air pollutants impair health and economic productivity, not to mention result to significant climate impacts. For example, poor air quality will hamper SDG 3 on "ensuring health lives and promoting well-being for all at all ages" or SDG 11 on "making cities and human settlements safe, resilient and sustainable" (UNEP, 2019). It is rightly said in the *Air Pollution in Asia and the Pacific: Science-based Solutions Report* that, "despite its inherent complexities and projected difficulties related to effective implementation of appropriate measures, AQM is just too important to dismiss as it is a critical component of sustainable development."



Source: modified from Le Blanc 2015

The links between air quality and sustainable development goals demonstrate co-benefits. The term “co-benefits” originated in the context of climate mitigation – it refers to other benefits (such as meeting development goals) of an action which was mainly designed to reduce greenhouse gas (GHGs) emissions (See module on Co-benefits of air and climate policies and measures). Co-benefits is not limited to climate mitigation and can also be seen as the other benefits resulting from an air pollution reduction measure. The co-benefits approach facilitates AQM mainstreaming by demonstrating that air pollution control strategies and other urban development projects (e.g. infrastructure building or transportation) can have synergistic or mutualistic effects. The co-benefits approach also helps in improving multi-stakeholder governance arrangements since it can be used to show shared interests among actors who may not be aware of them at the onset (IGES, 2018).

This module uses the development of a clean air action plan (CAAP) as the entry point for several of the approaches or steps it prescribed. This will make it easier for air quality managers, technical officers and policymakers to integrate the mainstreaming into their AQM activities. Mainstreaming is important as it allows cities to work on key issues such as air pollution, public health, transportation, waste management or energy management simultaneously. This offers an opportunity for a more realistic accounting of benefits of a policy or measure, thereby delivering maximum impact using existing resources (Clean Air Asia, 2019).

GUIDELINES ON MAINSTREAMING AIR QUALITY

The first three sections contribute towards the first level of mainstreaming (integrating air quality management (AQM) into governance, institutional arrangements, and processes) while the final two are more appropriate to the second level (including air quality goals and considerations in the city’s overall development goals, performance indicators, and plans):



1. Improve awareness and understanding of policymakers and decision-makers on the importance of mainstreaming air quality

This can be done by engaging senior-level officials (top-down approach) with significant experience and knowledge of air pollution as champions for communicating this issue to others. A similar bottom-up approach can be performed as well, involving staff and technical officers from the city planning, environment, transportation, health and relevant departments (bottom-up approach). The bottom-up approach can be more technical and aim to build the capacity of the participants in facilitating mainstreaming through their respective roles in the city. A third approach can involve a communication expert or the public information office taking on this role. The target audience can be comprised of both government and non-government stakeholders (e.g. private sector, non-government organizations, academic and research institutions, etc.) who are actors or can play supporting roles in mainstreaming air quality (IGES, 2014).

It is recommended that these engagements be part of and support CAAP development. The CAAP development process will provide clear action points that these stakeholders can see through, after the engagement activities. For more information, refer to the Step-by-step guide for cities to develop CAAPs. Stakeholder engagements for mainstreaming can be conducted in Step 1: Establish the planning process and Step 3: Target setting, selecting appropriate control measures, and planning for operationalization.

2. Improve inter-agency coordination mechanisms to support mainstreaming

Within the city, horizontal coordination among different city departments is important so they can work together on decision-making processes and institutional structures. Strengthening coordination can result to “greater understanding of cross issues synergies and conflicts, generate policies and measures consistent with that understanding, and lead to greater efficiencies that lower implementation costs (IGES, 2014).” Vertical coordination among national, regional/provincial, and local levels can in turn ensure cohesion of local strategies with the national government’s overall development goals. Moreover, the vertical coordination will enable the national or sub-national governments to scale-up a city’s good practices on mainstreaming to other cities in the country.

A good first step towards this end is the formation of an inter-agency working group as part of CAAP development. Or if such a group already exists within the city, convening it can function as the coordination mechanism for the mainstreaming process.

Likewise, as already mentioned, engaging with non-government stakeholders (universities, research institutions, private sector, non-government or international organizations, transport groups, etc.) is beneficial. This can bring on board fresh perspectives as well as financial, technical and capacity building support towards the mainstreaming process (IGES, 2014). The module on **Step-by-Step Guide for Cities to Develop Clean Air Action Plans** provides detailed guidance on forming an inter-agency working group and proposed roles of government and non-government stakeholders (see Step 1).

3. Incorporating clean air criteria into public procurement procedures



For goods and services that don't require the large capital outlays associated with major infrastructure, the more traditional route of public procurement – via a tendering process for goods or services – can be adapted to fit clean air goals. Cities administer multiple activities that generate productive city-wide economic activity, create jobs, and support livelihoods. However, these can also have negative environmental outcomes such as water and air pollution. Developing “green procurement” will enable the governments to ‘walk the talk’ in their air quality improvement efforts – they are able to apply air pollution control strategies to their own operations and activities.

Some of the clearest linkages between procurement and measures that support clean air include the following:

- Reducing traffic and air pollution through reduced road freight and cleaner vehicle fuels
- Avoiding chemicals harmful to public health and that negatively impact air quality
- Promoting products and approaches that reduce energy consumption and its impact on the environment
- Avoidance of energy intensive activities, promotion of efficient energy use and the switch to sources of renewable energy (UNEP, 2011).

These linkages should be reflected within bidding documents through the incorporation of selection criteria favoring service contractors or suppliers with environmentally sustainable practices (Clean Air Asia and UN Environment, 2019a).

For example, the selection criteria can give preference to bidders with an ISO 14001 accreditation. ISO 14001 is the family of standards which provides requirements for a company or organization's environmental management system. Having an ISO 14001 accreditation is one indicator that a company's operations is geared towards environmental sustainability. Cities can also be more specific towards specific indicators on their air quality agenda. Thus, another example can be requiring bidders to disclose estimated PM_{2.5} emissions (or carbon emissions) resulting from the service or product they are offering, considering its entire life cycle. Preference can be given to the company with the lowest projected emissions.

4. Integration of air quality with relevant sectors such as transportation, energy, industries and others

Integration of the clean air action plan with sectoral policies and plans

A Clean Air Action Plan (CAAP) is an efficient instrument of air pollution control. It is a scientific, stakeholder-driven and resource efficient process for identifying effective and appropriate pollution reduction measures for the city. For more information about what a Clean Air Action Plan contains, how it is developed and examples, please refer to the module on [Step-by-step Guide for Clean Air Action Planning](#).

In order to ensure the CAAP's sustainability and the achievement of clean air targets, the plan needs to be integrated into sectoral policies and plans which have direct and indirect impacts on air quality. Examples



of such sectors include transportation, energy production and industries. This integration can be carried out through a Strategic Environmental Assessment (SEA) (ADB, 2017). A SEA is a systematic framework for assessing environmental impacts of development that, when applied, will allow air pollution prevention and control strategies to be incorporated in city's development and sector plans.

The SEA is said to have evolved largely as an extension of the Environmental Impact Assessment (EIA) principles, processes, and procedures. However, its scope can be seen extending beyond a regular EIA as it facilitates consideration of environmental indicators in relation to fundamental issues such as why, where, and what form of development, rather than looking at how an individual project should be implemented. This is elaborated by the specific values the SEA brings, as identified by UNECE (n.d.):

- The opportunity to consider a wider range of alternatives and options at this level compared with the project stage
- Influencing the type and location of development that takes place in a sector or region, rather than just the design or siting of an individual project
- Enhanced capability to address cumulative and large-scale effects within the time and space boundaries of plans and programs as opposed to the project level
- Facilitating the delivery of sustainable development through addressing the consistency of plan and program objectives and options with relevant strategies, policies and commitments
- Streamlining project EIAs to the SEA, thereby avoiding questions (whether, where, and what type of development should take place) that have been decided already with environmental input

The baseline assessment of the SEA should result in a holistic understanding of the potentially affected environment and social systems. Thus, the data set involves more than a mere inventory, e.g. listing flora, fauna, landscape and urban environments (OECD, 2006). The SEA provides a comprehensive framework to facilitate air quality integration. This means that, for example, air quality-related indicators such as air quality levels, emissions produced, and/or emission reduction targets can be included as performance indicators under energy or transportation sectoral plans rather than their inclusion being merely as an ad-hoc practice.

Linking AQM with municipal service provision

Cities are increasingly taking over the provision and management of public services as seen in the global trend of decentralization and devolution of fiscal, political, and administrative powers from central governments to local ones. Among others, this offers a starting point for more aggressive air quality protection strategies to be integrated into municipal operations. Many of the primary revenue streams that fund municipal operations are linked to the very sectors that impact air quality whether directly or indirectly. These sectors include building stock, urban transport, waste management, water and energy supply (OECD, 2012). This means that there is an opportunity to utilize these revenue streams in carrying out their respective municipal services while at the same time funding pollution control measures (see Table below).

Municipal service/role	AQM interventions
Public Buildings	Energy efficiency



	Renewable energy
	Water conservation
Urban planning	Land use Energy efficiency Pedestrianization Green spaces Improved mobility
Transport / Mobility	Vehicle emissions Low-emissions zones (LEZ) / congestion charges Parking fees / policies Clean fuels promotion BRT / rail / metro Bike lanes
Public Space / parks	Car-free streets / zones Park /green space development Community gardens
Waste Management	Improved collection Eliminate open burning of waste
Construction oversight	Dust control Construction/demolition waste management
Water / Wastewater services	Reduced water waste/loss Biogas recovery
Building standards	Energy efficiency Water conservation
Energy supply*	Energy efficiency Renewable energy

****In the case of municipally owned energy supplier.***

Maximize co-benefits by implementing pollution reduction actions that are proven to contribute to development goals

The Air Pollution in Asia and the Pacific: Science-based Solutions Report identified a set of measures that offer further means of improving air quality, even if these do not primarily target air pollution. Often, they fall under the jurisdiction of different authorities and are discussed in different policy frameworks in which air quality managers are often not represented. These include measures closely related to economic and social development, energy or agricultural policies, or urban management (refer to Table below).

Sector	Measure
Clean cooking and heating	Use clean fuels – electricity, natural gas, liquefied petroleum gas (LPG) in cities, and LPG and advanced biomass cooking and heating stoves in rural areas; substitution of coal by briquettes
Renewables for power generation	Use incentives to foster extended use of wind, solar and hydro power for electricity generation and phase out the least efficient plants
Energy efficiency for households	Use incentives to improve the energy efficiency of household appliances, buildings, lighting, heating and cooling; encourage roof-top solar installations
Electric vehicles	Promote the use of electric vehicles
Improved public transport	Encourage a shift from private passenger vehicles to public transport
Solid waste management	Encourage centralized waste collection with source separation and treatment, including gas utilization
Wastewater treatment	Introduce well-managed two-stage treatment with biogas recovery
*Energy efficiency standards for industry	Introduce ambitious energy efficiency standards for industry
*Rice paddies	Encourage intermittent aeration of continuously flooded paddies
*Coal mining	Encourage pre-mining recovery of coal mine gas
*Oil and gas production	Encourage recovery of associated petroleum gas; stop routine flaring; improve leakage control
*Hydrofluorocarbon (HFC) refrigerant replacement	Ensure full compliance with the Kigali Amendment

Note: Measures with asterisk (*) are more applicable as national government interventions.

5. Utilize economic-based tools or mechanisms that support mainstreaming, such as:

Cost-benefits analysis

A cost-benefit analysis provides decision makers with a comprehensive overview of the impacts of air pollution, the costs of various scenario mitigation options, and the benefits in both economic and societal impacts associated with these measures. A city-level cost benefit analysis provides decision-makers with a tool to evaluate pollution-control strategies and measures in an objective manner within the wider



context of the city's overall development as well as social, economic and environmental impacts (Clean Air Asia, 2019a).

More information about cost-benefit analysis and associated tools can be found in the module on [Co-benefits of air and climate policies and measures](#).

[Financing that promote \(or even require\) demonstrating co-benefits in strategies and interventions](#)

A main example of this is climate finance. Climate finance aims to reduce emissions of GHGs, at same time looking at co-benefits such as air quality improvements or reduced vulnerability to climate impacts.

Climate finance is applicable to air quality-related solutions such as

- Energy efficiency
- Waste treatment / biogas / composting
- Renewable energy
- BRT implementation
- Green ports

The [Asia-Pacific Climate Finance Fund](#) is an example of this.

CASE STUDY

Provided here is a case study where air quality and climate change measures were integrated in a city's development plans.

Integrating air quality in development planning: Bogor City, Indonesia

From 2015-2019, Clean Air Asia together with the Institute for Global Environment Strategies (IGES) and Asia Centre for Air Pollution Research (ACAP) implemented the Integrated Programme for Better Air Quality in Asia (IBAQA) funded by the Ministry of Environment, Japan. It aims to improve air quality and contribute to more livable and healthy cities in Asia with a focus on cities with high impact potential and potential for leveraging wider change. Bogor City, Indonesia was among the cities in Asia who received technical assistance towards the development of a CAAP.

To ensure sustainability of the CAAP, the city's development agency has been working to integrate it into the Bogor City Medium Term Development Plan (RPJMD) 2020-2024. This will enable formation of an implementation team under the direction of the Mayor and the passage of supporting regulations. This way, the CAAP will also be evaluated and updated every five years as one of the inputs to the Bogor City RPJMD. The integration follows the direction set by the National Mid-term Development Plan for 2015-2019 (RPJM 2015-2019) which identified air quality improvement as one of its priorities. The National Mid-term National Development Plan followed the sustainable development framework of considering environmental, economic and social targets in the planning process. The said plan specified performance targets for 2015 to 2019, prioritizing the reduction of emission load from the industrial sector by 15% by 2019 (with 2014 baseline) as well as improving city air quality monitoring systems and data management (Clean Air Asia ,2019b).



REFERENCES:

Asian Development Bank. (2017). *Mainstreaming Air Quality in Urban Development in Asia*. Mandaluyong City, Philippines: Asian Development Bank, 2017.

Clean Air Asia and UN Environment. (2019a). Training module on Guidance Framework for Better Air Quality in Asian Cities. Guidance Area 7: Financing Air Quality Management. Unpublished.

Clean Air Asia and UN Environment. (2019a). Training module on Guidance Framework for Better Air Quality in Asian Cities. Guidance Area 5: Clean Air Action Plans. Unpublished

Crane, K. and Mao, Z. (2015). *Costs of Selected Policies to Address Air Pollution in China*. Rand Corporation, Santa Monica, CA, USA. Retrieved from:

https://www.rand.org/content/dam/rand/pubs/research_reports/RR800/RR861/RAND_RR861.pdf

Institute for Global Environmental Strategies (IGES). (2014). *Asian Co-benefits Partnership (ACP) White Paper 2014: Bringing Development and Climate Together in Asia*. Japan: Ministry of the Environment, Japan.

Organisation for Economic Co-operation and Development (OECD). (2006). *Applying Strategic Environmental Assessment: Good Practice Guidance for Development Co-operation*. Retrieved from:

<https://www.oecd.org/environment/environment-development/37353858.pdf>

United Nations Economic Commission for Europe (UNECE). (n.d.). *Resource Manual to Support Application of the Protocol on SEA*. Retrieved from:

http://www.unece.org/fileadmin//DAM/env/eia/sea_manual/chapterA1.html

United Nations Environment Programme (UNEP). (2019). *Air Pollution in Asia and the Pacific: Science-based Solutions*. Bangkok, Thailand: United Nations Environment Programme (UNEP).

United Nations Environment Programme (UNEP). (2011). *Buying for a Better World, A Guide on Sustainable Procurement for the UN System*.