Clean Air Scorecard: *helping improve management of air pollution and GHG emissions*

Background Information

There is a growing interest among various groups, including the general public, media, international organizations and policy-makers, for an understanding of the air quality management status and trends in Asia, especially at the city-level. While there are tools available that measure environmental performance in general, there is limited methodology specifically for assessment of air quality management for cities.

A lack of guidance has resulted in a number of reports and publications using the good versus bad list analysis—100 dirtiest cities, top 10 cities with best air quality, usually only considering air quality levels for a city. This is problematic as they may not put the data into context, for example, they may only look at one pollutant, or only one year or not consider seasonal differences. Other factors such as meteorological conditions and topography and differences in air quality monitoring methodology (e.g. frequency, pollutants measures, etc.), among others, are often not considered. This paints an incomplete picture as it does not consider the: (1) air quality management capacity and (2) the clean air programs and actions being implemented in the city.

Recognizing this need, CAI-Asia has developed an objective and comprehensive analysis tool for understanding the air quality management status in cities and identifying areas for improvement which incorporates (1) air quality levels, (2) clean air management capacity and (3) clean air policies and actions—**the Clean Air Scorecard**.

This was developed under the Sustainable Urban Mobility in Asia (SUMA) program with support from Swedish International Development Cooperation Agency (SIDA) and Asian Development Bank (ADB).

Our Approach

The Clean Air Scorecard tool evaluates the current air quality management status of a city based on three indices—

1. Air Pollution and Health Index (APHI)
2. Clean Air Management Capacity Index (CAMCI)
3. Clean Air Policies and Actions Index (CAPAI)

Air Pollution and Health Index (APHI)

This index will provide an analysis of where air pollution levels of cities are against WHO guideline values and WHO interim targets (i.e. indicators for individual pollutants would be aggregated into one index, but by basing the index on the WHO guidelines there is an explicit relevance to health aspects of air pollution, *i.e.* a "good air" day in this index is in relation to WHO guidelines rather than country standards which vary and are generally less stringent). Pollutants included are PM_{10}, $PM_{2.5}$, SO_2, CO, NO_2, Pb, and O_3. While concentration levels are calculated for all these pollutants, if monitored, the rating is based on PM_{10}.

Allocation of points is based on WHO air quality guidelines and interim targets. Ratings include: excellent, good, moderate, poor, very poor, critical.

Figure 1: Air quality in a city (days difference)
Source: CAI-Asia Center, 2009.

Figure 2: Snapshot of Clean Air Scorecard Tool Results Page
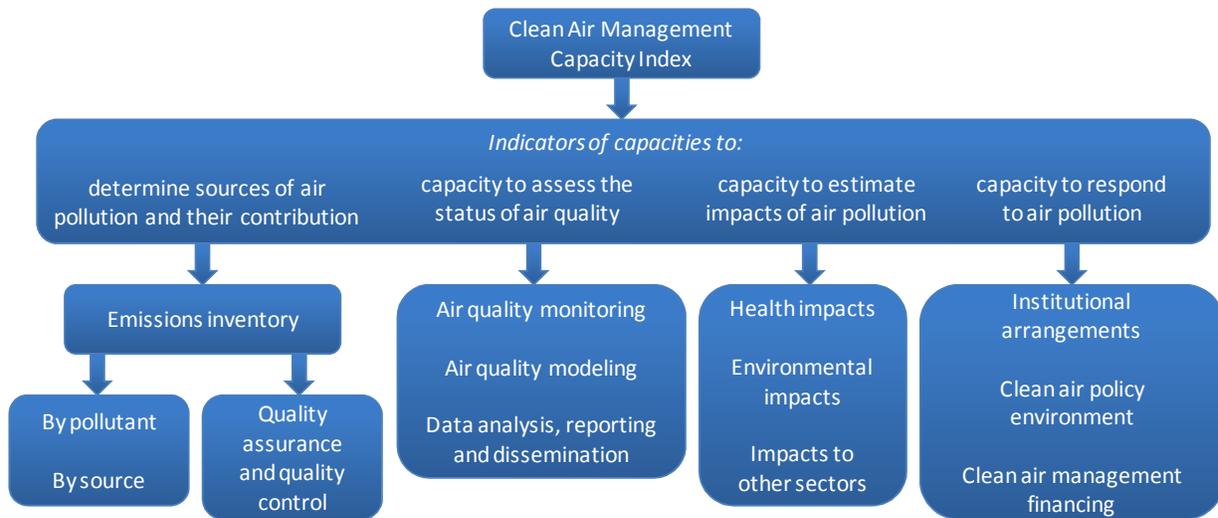**Source: CAI-Asia Center, 2010.**

Clean Air Management Capacity Index (CAMCI)

This index is an aggregation of indicators under four similar categories as included in previous tools (but using an updated questionnaire and scoring system): capacity to determine sources of air pollution and their contribution (emissions inventory); capacity to assess the status of air quality (air quality monitoring, modeling and data analysis and reporting); capacity to estimate impacts of air pollution; and capacity to respond to air pollution (institutional arrangements, clean air policy environment and clean air management financing). Figure 3 presents the different indicators under CAMCI. Ratings include: excellent, good, moderate, limited, minimal.
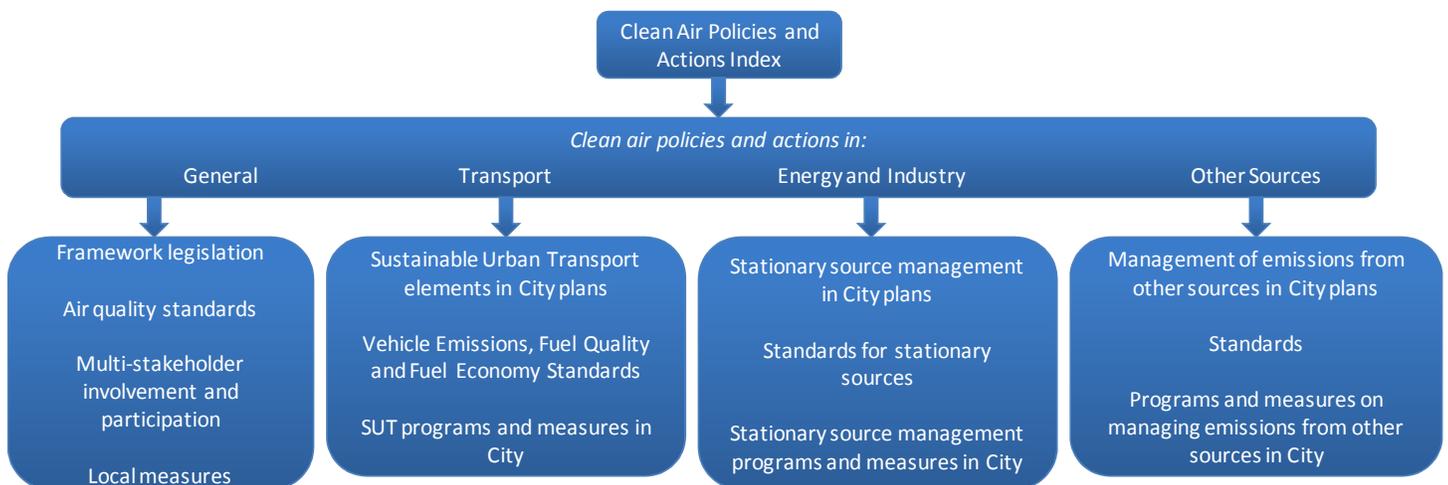
Clean Air Policies and Actions Index (CAPAI)

This index is an aggregation of indicators that assess the existing policies and actions to reduce air pollutant and greenhouse gas emissions in four categories: general, transport (mobile), energy and industry (stationary), and other (area and trans-boundary). Figure 4 presents the different indicators under CAPAI. Ratings include: excellent, good, moderate, limited, minimal.

For both CAMCI and CAPAI, scoring was based on internal discussions and advice from experts taking into consideration technological developments and the current situation in Asia.

Figure 3: Clean Air Management Capacity Index Indicators
Source: CAI-Asia Center, 2009.

Figure 4: Clean Air Management Policies and Actions Index Indicators
Source: CAI-Asia Center, 2009.

Each of these indices consists of a number of indicators which were designed to determine whether the status of the city with respect to a particular element each index. Each question is allocated a score. APHI is given 100 points while CAMCI and CAPAI have 400 points each. Higher points indicates better air quality situation, in terms of levels, management capacity and policies and measures, in the city.

An equal weighting of each index was applied (ratio is applied to each index) and the summation of scores the three indices results to overall clean air score – equivalent to 100 points (Figure 2). The score band and its corresponding categories are presented in Table 1. The bands describe a range of values comprising a particular level of air quality management situation (WHO/UNEP/MARC, 1996).

$$APHI + CAMCI + CAPAI = \text{Clean Air Score}$$

Figure 5: Overall Structure of the Clean Air Scorecard
Source: CAI-Asia Center, 2009.

Table 1: Clean Air Score Band and Categories

Categories	Score Band
Excellent	81-100
Good	61-80
Moderate	41-60
Limited	21-40
Minimal	1-20

Source: CAI-Asia Center, 2010.

Clean Air Scorecard Report

The Clean Air Scorecard Version 1.0 Tool automatically generates a report (Figure 6) providing the following information:

- ✓ Results of Clean Air Scorecard for the year of assessment (for each separate indexes and sub-index and the overall clean air score); and
- ✓ Strengths and weaknesses of the city based on clean air scores.

Aside from these results generated by the tool, a separate Clean Air Scorecard Report for the city can be prepared containing these *additional information*:

- ✓ Introduction;
- ✓ Recommended actions to improve capacity and policies/measures and to integrate AQ and GHG management, which will be categorized into short and long-term actions; and
- ✓ Barriers to applying the co-benefits approach, lessons learned, and recommendations for other cities.

Figure 6: Snapshot of Clean Air Scorecard Report Page
Source: CAI-Asia Center, 2010.

Use of Results

Depending on the purpose, the Clean Air Scorecard results can be used to:
- ✓ Help cities
  - Have a comprehensive understanding of the status of their air quality management;
  - Identify gaps in their air quality and GHG management strategies and activities;
  - Benchmark air quality and GHG management developments over time;
  - Identify concrete policies and measures to reduce emissions of air pollutants and greenhouse gases; and
  - Develop an integrated plan for air quality and GHG emissions management.
- ✓ Help national governments, development agencies, donors and other stakeholders
  - Understand where cities need help, which can be incorporated in national plans/policies, donor priorities and technical assistance projects / loans;
  - Cluster cities/provinces according to capacity-building needs;
  - Compare cities using comparable methodology; and
  - Create a platform for exchange of learning and experience between cities.