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About the cover
The cover art was inspired by the masthead of our Clean Air Portal, which shows a livable city with clean air, sustainable transport, and a stable climate, and where walking rules over other modes of transportation. This design is also used in our reports and presentations.

Reference and Credits
Photo credits: CAI-Asia Center staff and Country Coordinators
Design and layout: Design Muscle Inc.
References for graphs, tables, data and external publications are available online at www.cleanairinitiative.org/portal/annualreport

About CAI-Asia
The Clean Air Initiative for Asian Cities (CAI-Asia) promotes better air quality and livable cities by reducing air pollution and greenhouse gas emissions. CAI-Asia was established in 2001 by the Asian Development Bank, the World Bank and USAID, and is part of a global initiative that includes CAI-LAC (Latin American Cities) and CAI-SSA (Sub-Saharan Africa). Since 2007, this multi-stakeholder initiative is a registered UN Type II Partnership with almost 200 organizational members, eight Country Networks and the CAI-Asia Center as its secretariat. Individuals can join CAI-Asia by registering at the Clean Air Portal (www.cleanairinitiative.org), joining our Communities of Practice, or subscribing to our Listserv. Organizations can join the CAI-Asia Partnership or support our activities by becoming a CAI-Asia Center member.
While 2009 showed that climate change negotiations have a long way to go, the heightened attention for climate change and relevance to air pollution has enabled CAI-Asia to broaden its work with new donors and partners. This coincided with the completion of the Sustainable Urban Mobility in Asia (SUMA) program, which propelled several new projects on fuel economy, measuring CO₂ emissions, and walkability to be implemented with SUMA partners and others.

At the regional and national levels we reviewed ambient air quality standards and policies and facilitated strengthening of fuel quality and vehicle emissions standards. Our pioneering trucks project in Guangzhou will lead to the design of a broader green freight program for China. With the aim to reach more Asian cities, we established a Network of City Networks and expanded our on-the-ground activities through CAI-Asia Country Networks. Our work, and that of CAI-Asia partners, is consolidated in our new Clean Air Portal, which also allows policymakers and practitioners to interact through Communities of Practice.

Looking into the future, we will continue to work on reducing air pollution and greenhouse gas emissions within the context of three developments: the growing relevance of climate change for air quality management, the rapid urbanization in Asia that requires a fundamental shift in city planning, and the changing role of development agencies and other stakeholders from financiers to providers of expertise in developing cities sustainably. Our upcoming Better Air Quality (BAQ) 2010 conference will explore these developments under the theme “Air Quality in a Changing Climate.”

We hope to see CAI-Asia Partnership members, donors and the wider air quality community in November in Singapore!
Air quality is improving in many Asian cities. Levels of Sulfur dioxide (SO$_2$) and Nitrogen dioxide (NO$_2$) have stabilized and levels of particulates (PM$_{10}$) are declining. However, concentrations of all three pollutants are still above World Health Organization (WHO) guidelines. Little information exists on levels of ozone and fine particulates (PM$_{2.5}$) as few cities and countries monitor this.

In recent years, climate change emerged as one of the defining threats to our planet, as witnessed by the presence of world leaders at COP 15 in Copenhagen. This has been accompanied with a greater focus on reducing greenhouse gas (GHG) emissions, especially Carbon dioxide (CO$_2$). While we welcome this development, other environmental issues, such as air pollution, risk being sidelined by policymakers and development agencies.

The book *Air Pollution and Climate Change: Two Sides of the Same Coin*, published in 2009, and to which CAI-Asia contributed, found that air pollution reduction is often considered as a welcome side effect of climate change mitigation policies and measures. However, rarely is the climate impact, positive or negative, from air pollution considered. There are several reasons for applying the co-benefits approach that maximizes integration of air quality management and climate change mitigation.

Firstly, air pollutants and CO$_2$ are both emitted from fuel combustion in transport, power generation and industry, and from biomass burning. Therefore solutions, whether policy or technological, overlap, for example through energy and fuel efficiency. Moreover, air pollutants can significantly affect climate. Aerosols have a net cooling effect, while ozone and black carbon have a net warming effect. As CO$_2$ has a longer lifetime, the impacts of CO$_2$ mitigation policies may take decades to realize. Reduction of short-lived pollutants like ozone and black carbon provide immediate climate benefits, and their combined forcing may outweigh that of CO$_2$ over the next decades. Finally, developing countries have limited institutional capacity and financial means to address air pollution and climate change. The Intergovernmental Panel on Climate Change (IPCC) states that integrated policies offer potentially large cost reductions compared to treating policies in isolation.

To integrate air quality management and climate change mitigation in Asia, we advocate:

- Combined assessments and measurement tools. CAI-Asia developed a Clean Air Scorecard for cities, Integrated Emissions Accounting tools for companies, and CO$_2$ measurement methodologies for transport.
- Alignment of institutional responsibilities and integrated climate change and air pollution plans and policies. For example, the US Environmental Protection Agency (EPA) now regulates CO$_2$ as a pollutant under the Clean Air Act.
- Donors and foundations placing climate change and CO$_2$ reduction within the context of sustainable development by explicitly including local development goals (such as air pollution reduction, energy efficiency, and sustainable transport).
We asked members of the Partnership Council of the CAI-Asia Partnership what the role is of cities, national governments, NGOs and academia, the private sector, and donors and development agencies in integrating air quality management and climate change mitigation.

Ir. H. Eddy Santana Putra, Mayor of Palembang City, Indonesia

“Growing cities face the day-to-day challenge of managing air quality. Cities are also beginning to feel the impacts of climate change. City leaders have to always be several steps ahead of a potential public health disaster or a climate change crisis. This requires a mindset of prevention rather than cure. Palembang City supports Indonesia’s national policy and program to cut GHG emissions by 26% by 2020. We realize that several measures to address air pollution also reduce GHG emissions. This includes a Bus Rapid Transit system, Car Free Days, zero-emission zones, planting one million trees, and trapping methane emissions at landfills.”

J.S. Kamyotra, Member Secretary of the Central Pollution Control Board, India

“Government agencies provide the overall direction. We therefore need a strong and integrated national policy to guide action at local levels. It would be desirable to integrate air quality and climate change policies under a single national law, or at least to make sure that different policies can complement—not contradict—each other. The national government can provide incentives, financial support, and capacity building to cities so that they can better manage air quality and carbon dioxide emissions. We would also like to investigate how NAMAs or Nationally Appropriate Mitigation Actions can address both climate change and air pollution.”

Elisea Gozun, Vice President of the Partnership for Clean Air, Philippines

“Non-profit organizations, universities, and research institutes play an important role in raising public awareness, building capacity of policymakers, and documenting the available science behind air pollution and GHG emissions and the linkages between them. They contribute to data collection and analysis, and develop concrete policy recommendations that integrate air quality and climate change, thus making them valuable partners to governments and policymakers. Collectively, we give civil society a louder voice in the international development arena, and we understand how specific policies and actions can help the most vulnerable groups.”

Klaus Burger, Managing Director of MAHA Maschinenbau Haldenwang

“The private sector has proven time and time again to be a great source of innovation. Technologies now exist to reduce the impact of, or even reverse, air pollution often resulting in positive benefits for climate change mitigation as well. But the private sector can also be a major contributor to the problem, which is why GHG and air pollution accounting, energy efficiency, and corporate social responsibility programs are there to make us good corporate citizens.”

Roland Haas, Principal Adviser of GTZ

“Development agencies should provide the necessary inputs to assist cities and national governments to develop their capacity to improve air quality. This focuses on legal framework development, institutional adjustments, training national, regional, and local government officials and their stakeholders. This requires knowledge on pollutants in the air, where they come from and what their negative impacts are. Most importantly, creating political will and public awareness is required to succeed.”
The Clean Air Initiative for Asian Cities (CAI-Asia) was established in 2001 as a multi-stakeholder initiative to promote improved air quality in Asian cities by sharing experiences and building partnerships. Since 2007, CAI-Asia is a registered UN Type II Partnership with almost 200 organizational members, eight Country Networks, and the CAI-Asia Center as its secretariat. Over the years, we have expanded our activities to cover air pollutants and GHG emissions, and placed our work in the context of making cities more livable.

For these reasons, CAI-Asia’s revised mission is to **promote better air quality and livable cities by translating knowledge to policies and actions to reduce air pollution and greenhouse gas emissions from transport, energy and other sectors.**

Recognizing that broad stakeholder cooperation is needed to achieve this, CAI-Asia is guided by a five-member Partnership Council representing each membership category: cities, government agencies, NGOs/academia, private sector, and development agencies. The CAI-Asia Center is a registered NGO with its own Board of Trustees and members that include the Partnership Council and private sector members.

Eight Country Networks work together with the CAI-Asia Center and partners to mobilize action at the country and local levels. Country Networks are structured either as registered associations, as NGOs, or as informal networks. Each is represented by CAI-Asia Country Coordinators, who meet at annual Country Network Summits to share achievements, scope future work, and foster stronger collaborations.

Every two years, our partners come together at CAI-Asia’s flagship event, the Better Air Quality (BAQ) Conference, which is Asia’s largest gathering of air quality practitioners bringing together about 1,000 stakeholders.
Our Strategy
The CAI-Asia Strategy 2009-2012 lays out how we work to achieve the following outcomes in support of our mission:

- Strengthened and harmonized regional and national policies and standards
- Enhanced national and local frameworks for sound policies, programs, and urban development
- Improved monitoring, measurement, and information on air quality, health, climate change, energy, and transport

Our strategy places air pollution and GHG emission reductions in a broader context, recognizing that the “business-as-usual” approach for developing Asian cities is not sustainable.

On the one hand, we support cities to “scale out” their efforts by focusing on

- Achieving real improvements in air quality and livability of cities through on-the-ground actions
- Integrating activities in a multi-sector approach as part of wider urban planning
- Co-benefits of climate change and sustainable development

On the other hand, we need to extend successes by “scaling up” to reach about 2,500 Asian cities with over 100,000 people. Many cities do not have international or national support for programs to reduce air pollution and GHG emissions.

Integrating management of air quality and climate change in a broader context
Average particulate matter (PM$_{10}$) data in 2008 from 230 cities in Asia shows that 40% of Asian cities have annual average concentrations complying with the World Health Organization air quality interim target of 70 µg/m$^3$, and only 1% of cities meets the 20 µg/m$^3$ annual guideline. These cities include Singapore, Tokyo, and smaller cities in Thailand and Indonesia. Several cities started measuring other pollutants that impact health, like ozone and PM$_{2.5}$. The annual average PM$_{10}$ concentration for all cities is 90 µg/m$^3$ and in several cases exceeds 200 µg/m$^3$. The majority of people living in Asian cities are thus exposed to unhealthy levels of air pollution.

CAI-Asia’s survey of ambient air quality standards in 18 Asian countries found that

- All countries, except Afghanistan, Bhutan, and Laos, have ambient air quality standards but there is no roadmap for bringing standards closer towards WHO guidelines and interim targets over time.
- The link between ambient air quality standards and standards for fuel quality and vehicle emissions and for stationary sources is not made clear.
- Environment ministries set and monitor compliance with ambient air quality standards, but health ministries have no explicit role in air quality management, despite the significant impact of air pollution on public health and costs.
- In many cities there are too few monitoring stations to paint a complete picture of the city’s ambient air quality and to monitor air quality in hotspots where people are most exposed.

To improve the ambient air quality in smaller cities, in collaboration with GTZ, we analyzed for Thailand, Indonesia, and the Philippines the air quality management systems and legal frameworks at the national and local levels. We also assessed if cities have sufficient mandates, resources and stakeholder support to draft and implement air quality action plans. In 2010, action plans will be developed together with cities, and CAI-Asia will work closely with Cagayan de Oro and Iloilo in the Philippines.
CLEAN AIR SCORECARD

A Clean Air Scorecard was developed to assess a city’s current management of air pollution and GHG emissions, and consists of three indexes:

- **Air Pollution and Health Index** – assessing air pollution levels of cities against WHO guideline values and interim targets
- **Capacity Index** – assessing a city’s capacity to determine sources, levels and impacts, and capacity to address air pollution and GHG emissions
- **Policies and Actions Index** – assessing the presence and enforcement of relevant national and local policies and actions to address emissions from mobile, stationary, area and transboundary sources

Cities can use the Scorecard results to improve their capacity, develop policies and measures, integrate plans for air quality and GHG management, and measure their impacts on air pollution and GHG emissions over time. National governments, development agencies, donors and other stakeholders can compare cities based on the Scorecard results to determine where cities need help and how this should be reflected in policies and programs, technical assistance projects, and loans. In 2010, the Scorecard will be applied to Bangkok, Jakarta, Manila and several other cities.

Cleaner and more efficient fuels and vehicles

CAI-Asia keeps track of developments in fuel and vehicle emissions standards in Asia. The “Roadmap for Cleaner Fuels and Vehicles in Asia” guides Asian governments to reduce transport emissions by improving these standards. To ensure broad stakeholder support we facilitated workshops with government agencies, oil companies, vehicle manufacturers, NGOs, universities, and other institutions.

Improving fuel efficiency of vehicles is an effective way of reducing CO₂ emissions. The CAI-Asia Center is working with the FIA Foundation under the Global Fuel Economy Initiative in promoting fuel economy policies and measures in Southeast Asia. A study was completed on the current status of fuel economy policies and measures in Southeast Asia, recommending a common framework for the introduction of fuel economy standards.

**Emission standards for new light-duty vehicles**

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*The level of adoption vary by country but most are based on the Euro emission standards

Italics – under discussion; a – gasoline; b – Diesel; c – Beijing [Euro 1 (Jan 1999); Euro 2 (Aug 2002); Euro 3 (2005); Euro 4 (1 Mar 2008); Euro 5 (2012)]; Shanghai [Euro 1 (2000); Euro 2 (March 2003); Euro 3 (2007); Euro 4 (2010)]; Guangzhou [Euro 1 (Jan 2000); Euro 2 (July 2004); Euro 3 (Step-Oct 2006); Euro 4 (2010)]; d – Delhi, Mumbai, Kolkata, Chennai, Hyderabad, Bangalore, Lucknow, Kanpur, Agra, Surat, Ahmedabad, Pune and Sholapur; e – US Tier 2 Bin 7 is equivalent to Euro 4 emissions standards
Measuring Emissions

Policymakers, development agencies, corporations and others need reliable air pollution and GHG emissions data in order to develop policies, projects and measures, and calculate their impact on emissions. National GHG inventories, required under the United Nations Framework Convention on Climate Change (UNFCCC), are usually based on top-down aggregation of energy supply and consumption data. However, the reliability and usefulness of data is especially limited for the transport sector because data are seldom reconciled with bottom-up information, and a breakdown by sector is usually not provided. Measuring and estimating emissions is further hampered by the lack of data, such as vehicle and travel characteristics, and limited methodologies to estimate current and future emissions.

What we are doing

- The paper “Transport and Carbon Dioxide Emissions: Forecasts, Options Analysis, and Evaluation,” highlights the relevance of measuring GHGs from the transport sector and proposes a methodology based on ASIF (activity-structure-intensity-fuel emission factors) to be adopted for emission quantification that would support the development of sustainable, low carbon transport systems in developing countries. Ultimately, measuring emissions should result in better policies as we identified for Southeast Asia.
- Together with ADB and the Institute for Transportation and Development Policy, we then developed methodologies for measuring CO₂ and air pollutant emissions from specific transport projects, including rural roads, urban roads, bike projects, rural expressways, light rail transit/metro rail transit, and bus rapid transit systems. These are applied to planned and existing transport projects to measure and find ways to reduce emissions. This is now leading to a globally accepted methodology in collaboration with the Global Environment Facility and the Sustainable Low Carbon Transport Partnership.
- With the aim to encourage corporations to adopt integrated accounting systems for GHG and air pollutants, together with the Philippine Business for Environment, we assisted several private sector firms in setting up such systems, making use of the GHG Protocol and other methodologies. We also work with corporations to measure and reduce fleet emissions (see box).
- With World Bank support, we are developing guidelines and a system for collecting and updating data on energy and transport parameters to benchmark GHG and local air pollution indicators across 13 countries and 25 cities in Asia. The data will be shared through the Clean Air Portal.

CLEAN FLEET MANAGEMENT TOOLKIT

As Asian economies grow, the contribution of vehicle fleets to air pollution and GHG emissions increases. Companies are also concerned about the financial impact of rising fuel consumption and costs. The UNEP Clean Fleet Management Toolkit was launched in Asia in 2009. In 2010, UNEP Partnership for Clean Fuel and Vehicles (PCFV), CAI-Asia, Partnership for Clean Air, and Philippine Business for Environment collaborated on

- Implementing the Toolkit at Meralco, Philippines’ major electricity distributor, resulting in a 16% fuel savings by its fleet
- Delivering Toolkit training in Asia and selected countries in Latin America and Eastern Europe
- Gathering data on fuels, vehicles and automotive fuel efficiency for 29 countries in Asia and the Middle East
International Study of Transport Systems in a Low Carbon Society

This international study, led by the Japan Institute for Transport Policy Studies, brought together leading regional institutions to assess how low carbon transport systems can be realized globally and for six regions (European Union, North America, Latin America, India, China, and Southeast Asia). The study estimated CO₂ emissions in 2000, forecasted emissions until 2050, and then determined what policies are needed for global CO₂ transport emissions in 2050 to be below a certain target. The target used was for CO₂ transport emissions in 2050 to be equal to or minus 50% of 2000 emissions and for transport emissions per capita in 2050 to be equal worldwide. This assumed different regional targets for 2050: capped emission growth targets for China, India and Southeast Asia and emission reduction targets far higher than 50% for the EU and North America. The study was unique in combining the 3-step visioning-backcasting approach with the ASIF methodology, as follows:

1. Baseline forecasting: establish an emissions baseline for 2000 and make a forecast for 2050 under a business as usual scenario
2. Visioning: determine one or more desirable alternative scenarios for low carbon transport in 2050
3. Backcasting: determine which policies are needed to achieve the alternative scenario(s), including the degree of effectiveness and a realistic timeframe for their adoption between 2000 and 2050

CAI-Asia conducted the regional study for Southeast Asia and took 2005 as the base year. Transport CO₂ emissions are expected to rise 7-fold from 200 million tons in 2005 to 1,600 million tons in 2050. Relying on technology-based solutions alone will not be sufficient in keeping emissions growth from transport within boundaries. Only a combination of different policies can achieve the target for 2050, including policies that

- Avoid unnecessary travel by reducing the over-all passenger and freight vehicle-kilometer traveled.
- Shift from private motorized modes to public transport and non-motorized modes for passenger travel and from road to rail for freight.
- Improve fuel efficiency and reduced emission factors for various transport modes and fuels.
CAI-Asia developed a new Clean Air Portal to serve as the first point of entry for policymakers, practitioners and the public. A baseline survey and in-depth interviews were conducted in 2009 to ensure that the Portal meets the needs of these groups. The Portal incorporates data and information on air quality, sustainable transport, energy, and climate change. It replaces our old CAI-Asia website and integrates the CitiesACT database.

With support from ADB through the Japan Special Fund, the Portal was designed with collaboration in mind. We work closely with CAI-Asia members to populate the portal with relevant content and improve access to information hosted on their websites. To ensure that the Portal effectively aligns knowledge management activities from different CAI-Asia members and other relevant institutions, we consult with our Knowledge Management Advisory Group represented by ADB, Clean Air Initiative of Latin American Cities (CAI-LAC), Global Atmospheric Pollution Forum, GTZ, Institute for Global Environmental Strategies, USAID, and the World Bank.

COMMUNICATING AIR QUALITY FOR MEGA-EVENTS

Mega-events provide a unique opportunity to advance air quality management and make cities more livable. Building on our work for the Beijing Olympic Games, we are developing a website on Clean Air at Mega-Events within the Portal featuring information on air quality that participants, visitors, media, and citizens want to know.

The World EXPO 2010 is one such event, and with funding from the Fu Tak Lam Foundation, we help improve communication on air quality during and after the EXPO by providing information on Shanghai's air quality levels and measures. We also surveyed air quality management at past and planned mega-events and brought experts from Atlanta (Olympics 1996) and London (2012) to meetings in Shanghai to support the Shanghai Environmental Protection Bureau in improving the city's air quality plan. Other cities from the Yangtze River Delta also participated, and we will work with Shanghai to capitalize on the EXPO to move towards improved regional cooperation on air quality management. With support from Sida, we will also help the Central Pollution Control Board and other Indian organizations to improve air quality communication for the Commonwealth Games 2010 in Delhi.
How the Clean Air Portal can benefit you

Reach out and share updated information on air quality, climate change, energy, and transport

The Knowledgebase allows users to search for articles, policies, organizations, projects and programs, training courses, photos, videos, and more.

Promote events, publications, and newsletters to a wider audience

Online articles and links become easier to find because the Portal allows users to tag content thematically and geographically. You can also keep up to date with developments in different Asian countries through newsletters by our Country Networks.

Participate in online discussions in the Air Quality & Co-benefits and Sustainable Transport Communities of Practice (CoPs)

Posted messages are emailed either individually or as a weekly digest, but all attachments are stored in the Portal so your inbox remains clutter free!
Our work on sustainable transport over the past year resulted in the completion of the SUMA program and the start of several new projects on relevant topics including green freight, walkability, and two-stroke tricycles.

**Sustainable Urban Mobility in Asia**

Sustainable urban transport is characterized by giving priority to moving people rather than moving vehicles, and is essential for the sustainability of cities as a whole. The Sustainable Urban Mobility in Asia (SUMA) program helped transform the thinking on urban air quality, emissions, and the role of transport in urban development in developing Asia, and was instrumental in the establishment of the Sustainable Transport Initiative within ADB. Funded by the Swedish International Development Cooperation Agency (Sida) and ADB, SUMA was implemented by the CAI-Asia Center in partnership with EMBARQ, the World Resources Institute (WRI) Center for Sustainable Transportation, the German Technical Cooperation - Sustainable Urban Transportation Project (GTZ-SUTP), the Institute for Transportation and Development Policy (ITDP), the Interface for Cycling Expertise (I-CE), and the United Nations Centre for Regional Development (UNCRD).

SUMA included the development of a bus rapid transit (BRT) system operational plan (Ahmedabad) which won the Sustainable Transport Award and was a finalist for the International Transport Forum Award; improved bus system (Indore); cycling systems (Pune and Nanded); sustainable transport strategies (Philippines and Indonesia); a capacity building component; and research and guidelines development on air quality and GHG management, sustainable transport developments in Indian cities, e-bikes, social impact assessment, cycling and two and three-wheelers.

The program’s culminating SUMA Summit was held in Delhi with partners and stakeholders to present results and discuss how cities can develop their transport systems within the context of sustainable and low emissions urban development. The CAI-Asia Center developed a SUMA Framework in the shape of an inverted triangle, which symbolizes this paradigm shift that is needed in cities and consists of four steps. We will collaborate with our partners to implement the framework in cities in the coming years, by supporting them in three different ways: process facilitation, technical advice, and financing.

**Replacing Two-stroke Tricycles in Mandaluyong City, Philippines**

Two-stroke tricycles are a major concern because up to one-third of the fuel leaves the exhaust pipe as air pollution. Funded by the Petroleum Institute of the Philippines, and endorsed by the mayor of Mandaluyong City, we are working with the Partnership for Clean Air, Don Bosco Technical College and other partners to trial a replacement and scrappage scheme for two-stroke tricycles. Twenty operators each received an interest free loan of about US$1,700 from a revolving fund to purchase a four-stroke tricycle and handed in their old tricycle for scrappage. Drivers pay back the loan from fuel savings as four-stroke tricycles are about 20% more efficient. Over 90% of payments are received on time by the cooperative that handles the loans against a small fee. Two electric tricycles are being tested to determine if these could also be viable alternatives. Training for drivers and operators is planned in 2010 to raise further awareness of the scheme, and if successful, it could be expanded to Metro Manila to accelerate the phase-out of the about 300,000 remaining two-stroke tricycles.
From Green Trucks to Green Freight in China

A pilot project in Guangzhou aimed to develop a “proof of concept” for a green freight program for Guangdong Province and China. Supported by AusAid and Energy Sector Management Assistance Program (ESMAP), the project was implemented by CAI-Asia together with the World Bank, Guangzhou government authorities, US-based Cascade Sierra Solutions, and US EPA. It focused on analyzing the truck sector through research and a survey, developing and testing training materials for truck fuel efficiency, and a technology pilot.

As part of the technology pilot, three companies tested tire and aerodynamics technologies. Fuel and emissions savings for garbage trucks equipped with low rolling resistance tires and a tire pressure monitoring system were about 18%. This is much higher than savings seen in the United States, most likely because aside from reducing friction with the road, the new tires also made the truck more stable, thus reducing fuel use. Fuel savings of the long distance trucks was about 6.6%. This was less than expected because pilot trucks traveled at lower speeds than the 75 km/hour needed for aerodynamics technologies to significantly reduce drag and fuel use. Still, the savings are high enough for companies to be interested in these technologies. A video in English and Mandarin allows results to be easily shared with a larger audience.

The pilot proved the potential for these technologies, and is now likely to lead to a larger demonstration project for Guangdong Province. In parallel, we will be designing a Green Freight China program making use of the US Smartway program and other existing programs from Europe.

Improving Walkability in Asian Cities

The ability to walk (“walkability”) in Asian cities has gradually deteriorated due to the increase of motorized vehicles. With ADB and Fredskorpset support, we conducted walkability surveys for Cebu, Davao and Manila (Philippines) Colombo (Sri Lanka), Hanoi and Ho Chi Minh City (Vietnam), Jakarta (Indonesia), Karachi (Pakistan), Kathmandu (Nepal), Kota (India), Hong Kong and Lanzhou (China), and Ulaanbaatar (Mongolia).

Using a modified Global Walkability Index survey methodology first developed by the World Bank, the survey assesses the current pedestrian infrastructure in four areas: commercial, residential, educational, and public transport terminals. The survey also identifies preferences of pedestrians, and analyzes government policies and measures. The results will be used to raise awareness among the public and government officials and provide recommendations on how to improve walking in their cities. Main findings are

- Scores ranged from poor walkability (45 out of 100 points) to good walkability (70 points).
- Walkability is best around commercial areas in cities (61 points) and is surprisingly lowest around public transport terminals (54 points) despite the need for people to get to and from these terminals. Facilities for disabled people scored lowest, with only 39 points, indicating neglect for this group.
- Most respondents (78%) are not willing to walk more than 100 meters to pedestrian crossings. More importantly, if walking facilities are not improved, 81% of respondents indicated that they will shift to other transport modes. This means that unless the walkability of Asian cities is improved, we can expect a further rise in the use of motorized transport as more people are able to afford it, thus leading to higher emissions.
Dialogues with Stakeholders

To improve our effectiveness in helping Asian cities, we actively engage with stakeholder groups represented by the CAI-Asia Partnership: cities themselves, government agencies, the private sector, NGOs, academic and research institutes, and development agencies. Highlights in 2009:

Regional Dialogue with Development Agencies
For the fifth time, UNEP and CAI-Asia brought together representatives from 13 development agencies for the Regional Dialogue of AQM Initiatives and Programs in Asia. We informed them about the needs of developing Asian countries, so that development agencies can better consider these in bilateral discussions and programs. Main areas for needed assistance: air quality monitoring and impact assessment, setting fuel quality and vehicle emissions standards and developing roadmaps, vehicle inspection and maintenance, building capacity especially of government agencies, and raising awareness and involving stakeholders.

City Workshop in China
Vehicles emissions management (VEM) was the focus of the Fourth City Workshop attended by 14 member cities of the CAI-Asia China Network, and organized together with the Ministry of Environmental Protection, Qingdao Environmental Protection Bureau, and ADB. Participants provided feedback on the new air quality and sustainable urban transport policies and measures, and cities identified four priorities for effective VEM:

• Formulate regulations to provide a common framework for implementation in cities
• Define mandates and role of different government agencies, supported by stronger capacity building
• Coordinate the cooperation between government agencies and institutions to facilitate sharing of experiences and information and provide a scientific basis for policymaking
• The freight sector should not be neglected and all cities confirmed interest in a green freight program similar to the US Smartway program for trucks

Network of City Networks
A survey of existing city networks, conducted together with the Cities Development Initiative for Asia (CDIA), led to the establishment of the Network of City Networks. Enhanced collaboration between city networks will contribute to scaling up efforts and reach more of the 2,500 Asian cities that require assistance across a broad range of urban environment and development challenges. This will be achieved through a City Network Portal, annual meetings, an online forum, and a framework to improve collaboration between development agencies and cities.

MEMBERS OF THE NETWORK OF CITY NETWORKS

- Asian Cities Climate Change Resilience Network (ACCCRN)
- Cities Development Initiative for Asia (CDIA)
- CITYNET
- Clean Air Initiative for Asian Cities (CAI-Asia)
- Earthquakes and Megacities Initiative
- Global City Indicators Facility (GCIF)
- Global Energy Network for Sustainable Cities (GEN)
- ICLEI-Local Governments for Sustainability Southeast Asia Secretariat
- International Center for Sustainable Cities
- Kitakyushu Initiative (by Institute for Global Environmental Strategies, IGES)
- Metropolis
- Sustainable Mobility & Accessibility Research & Transformation (SMART)
- Union of Cities and Local Governments Asia Pacific (UCLG-ASPAC)
- Urban Age Institute
CAI-Asia is spearheading the “Save the Air” campaign that aims to

- Communicate the local and global impacts of air pollution to the public
- Focus on solutions combining technology, policy and behavior options
- Expand the community beyond experts and specialists

The campaign was launched in the Philippines, together with the Partnership for Clean Air, as Ligtas Hangin (“save the air” in Filipino) during the 10th anniversary celebration of the Philippine Clean Air Act. Nearly 300 participants drafted and signed the Clean Air 10 Declaration, calling on government and stakeholders to

1. Create a database of clean air technologies
2. Formulate a media strategy and core messages
3. Heighten collaboration with the private sector
4. Designate Environment and Natural Resources Officers and establish Anti-Smoke Belching Units
5. Organize technical training and logistical support for airshed governing boards and local government units
6. Institutionalize technical training on emission control measures
7. Enforce specific provisions of the Clean Air Act and address policy gaps by enacting local ordinances
8. Make available funds intended for clean air programs (such as the AQM Fund)
9. Establish a Clean Air Fund for the Environment
10. Institutionalize oil companies and industry support for clean air and climate change actions

During the Philippine Clean Air Month of November, stakeholders discussed at a series of events ways to implement the Clean Air 10 Declaration. In 2010, the focus of the campaign will be on anti-smoke belching in Metro Manila’s EDSA highway.

CAI-Asia plans to expand the campaign to other Asian countries starting with the promotion of a national Clean Air Month. We will also develop an online petition to gather support for clean air from cities around the region.
Blue Skies Exchange Program

Exchange programs are an effective way for Asian organizations to learn from one another. CAI-Asia runs the Clean Air and Blue Skies for Asia exchange program – now in its second phase – with support from Fredskorpset Norway. Young professionals spend ten months in another country to gain practical skills in air quality management. In 2009, four participants completed their exchange and five new participants started their assignments.

How phase 1 participants help their home countries

- Bimalka Sajeevi Perera recommended concrete actions for Sri Lanka such as the black smoke spotter program, roadside testing, strengthening vehicle import regulations, improving fuel quality based on best practices of the Hong Kong and Guangdong Province’s Vehicle Emission Control Strategy.

- Teresa Fung is back at the Hong Kong Polytechnic University developing air quality-related projects based on experience gained with the CAI-Asia Center in Manila.

- Karen Baydo helped document and communicate the results of the national workshop on clean fuels and vehicles in the Philippines using her experience in Vietnam.

- Pham Thi Vuong Linh, since returning from Hong Kong, ensures that the new air quality monitoring station in Hanoi works smoothly and produces quality data. She is developing the air quality monitoring standard operating procedures manual for certain parameters at the Vietnam Center for Environmental Monitoring (CEM).

- Collaborations continue beyond the exchange program. Hong Kong PolyU and CEM are jointly developing driving cycle and vehicle emission inventory for Vietnam. Hong Kong PolyU and University of Moratuwa have agreed to collaborate over the next five years on an education, research and scientific program on Energy and Environment.

What phase 2 participants are doing

In 2010, all exchange participants will apply the Clean Air Scorecard to their host city to identify how air quality can be improved. Participants will also conduct their own projects:

- Vu Tat Dat from the Pollution Control Department in Vietnam is learning about how the Philippines develops air quality plans with broad stakeholder participation, and is conducting a walkability survey in Davao.

- Charina “Chin” Cabrido from the Philippines is training “Walkability Ambassadors” together with Clean Air Network-Nepal, and is assessing the walkability in commercial, public transport, educational and residential areas in Kathmandu covering 59 km of roads.

- Sampath Ranasinghe (Air Resource Management Center in Sri Lanka) and Anjila Manandhar (Clean Air Network-Nepal) are working with Hong Kong PolyU on monitoring of indoor and outdoor air quality at houses located close to roads in Colombo and Kathmandu.

- Joy Bailey from the Philippines, through University of Moratuwa in Sri Lanka, works with 24 volunteers to assess walkability of 30 km of roads and walkways and conduct 180 interviews in Colombo. She also helps organize training on Air Quality Measurements and Modeling, and the National Symposium on Air Quality Management.
1. **Jiming Hao (Chair until June 2010)**
Mr. Hao has over twenty years experience in air pollution and climate change, environmental management, hazardous risk assessment, cleaner production, energy and environmental policy. He has published more than 180 papers and several books. He is a Professor and Dean of the Institute of Environmental Science and Engineering at Tsinghua University.

2. **Cornie Huizenga (Vice-Chair)**
Mr. Huizenga was instrumental in setting up CAI-Asia and was the CAI-Asia Center’s first Executive Director until December 2008. He currently is the convener of the Partnership on Sustainable Low Carbon Transport.

3. **Robert O’Keefe (Chair as of July 2010)**
Mr. O’Keefe is the Vice President of the Health Effects Institute (HEI), which assesses the health impacts of air pollution in developing countries. He is regularly called on to address prominent institutions, including the US Congress, the European Parliament, the National Academy of Science’s National Research Council and Institute of Medicine and many other domestic and international bodies.

4. **Charles Melhuish (Treasurer)**
Mr. Melhuish was one of the founders of CAI-Asia. Formerly the Lead Transport Specialist at the Asian Development Bank, he was responsible for developing and leading transport policy and knowledge across ADB. He managed CAI-Asia from 2001 to 2004.

5. **Francis Estrada**
Mr. Estrada is the Chair of De La Salle University in the Philippines and former President of the Asian Institute of Management. For over thirty years, Francis has been a prominent international investment banker, financial adviser and financial entrepreneur, specializing in Asia-related financial operations. He has set up several financial institutions and commercial enterprises around the world.

6. **Shreekant Gupta**
Mr. Gupta is Associate Professor at the Lee Kuan Yew School of Public Policy at the National University of Singapore. He specializes in environmental and natural resource economics, urban economics and public economics. He previously was the Director of the National Institute of Urban Affairs in New Delhi, India.

7. **Elisea “Bebet” Gozun**
Ms. Gozun was the former Secretary of the Department of Environment and Natural Resources (Philippines). UNEP honored her as one of the seven Champions of the Earth in 2007. Bebet also serves as Chair of the Partnership Council and Vice-Chair of the Partnership for Clean Air (PCA).

8. **David Guerrero**
Mr. Guerrero is the Chair & Chief Creative Officer of the BBDO Guerrero – Philippines. He ranked as one of Asia’s Top 10 Creatives by Campaign Brief Asia and only one of three people inducted into the Philippine Creative Guild Hall of Fame. He is also the first Cannes Lions jury president from Southeast Asia.

9. **Cielito Habito**
Mr. Habito is the Director of the Ateneo Center for Economic Research and Development (ACERD). He sits in the Board of several private corporations and foundations, and is a regular columnist of the Philippine Daily Inquirer. Dr. Habito was the former Secretary of Socio-economic Planning and former Director General of the National Economic and Development Authority (NEDA) for President Fidel V. Ramos (1992-98).
The CAI-Asia Center is the secretariat of CAI-Asia. Individuals and organizations support the CAI-Asia Center as voting members, non-voting members, or donors. Our Board of Trustees approves all membership applications. Voting members are the Trustees, stakeholder representatives of the CAI-Asia Partnership, and organizations providing more than $100,000 per year. Non-voting member organizations pay $20,000 to $100,000 per year. Other organizations that provide funding for projects and programs are donors.

### VOTING MEMBERS

**Trustees**
Jiming Hao, Cornie Huizenga, Robert O’Keefe, Charles Melhuish, Francis Estrada, Shreekant Gupta, Elisea Gozun, David Guerrero, Cielito Habito

**Stakeholder representatives**

- **Cities:** Ir. H. Eddy Santana Putra, Mayor of Palembang City, Indonesia
- **National government agencies:** J.S. Kamyotra, Central Pollution Control Board, India (in process)
- **Nongovernmental organizations and academia:** Elisea Gozun, Partnership for Clean Air, Philippines
- **Private Sector:** Klaus Burger, MAHA Maschinenbau Haldenwang
- **Development agencies and foundations:** Roland Haas, GTZ

### NON-VOTING MEMBERS

- **Shell**
- **ACFA**
- **Corning**

### DONORS IN 2009

- Asian Development Bank
- Fredskorpset Norway
- Institute for Transport Policy Studies
- United Nations Environment Programme
- World Bank
- Cities Development Initiative for Asia
- FIA Foundation
- Fu Tak lam Foundation
- German Technical Cooperation - GTZ
- Global Atmospheric Pollution Forum
- Heinrich Böll Foundation
- Institute for Global Environmental Strategies
- Institute for Transportation and Development Policy
- Murdoch University
- Philippine Business for the Environment
- Manila Observatory
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The CAI-Asia Center received grants, membership donations and other income totaling US$1,992,600 in 2009 (US$1,328,300 in 2008). Undisbursed funds as of 31 December 2009 amounted to US$70,900 (US$180,200 as of 31 December 2008).

The following are selected highlights for the year 2009:

- Total support and income revenues (including deferred grants from 2008 realized in 2009) amounted to US$2,167,700 (US$1,521,900 in 2008) of which US$1,159,100 or 53% was grant for the SUMA project, and US$90,000 or 4% was membership contributions.

- Grant expenses amounted to US$1,818,900 (US$1,316,300 in 2008) of which US$1,081,500 or 59% was for the SUMA project, the largest project implemented by the CAI-Asia Center.

- Total general and administrative expenses amounted to US$272,200 (US$340,700 in 2008) and represents 12.6% of the total revenues for 2009 (22.4% in 2008).

- Unrestricted funds earned during 2009 net of expenses amounted to US$76,600. This resulted to a fund balance of US$34,900 as of 31 December 2009.

The Center’s 2009 financial statements were audited by Punongbayan & Araullo (P&A), an independent auditing firm in the Philippines which is also a Member Firm of Grant Thornton International. P&A issued an unqualified opinion on the financial statements as of and for the year ending 31 December 2009, which are presented in accordance with Philippine Financial Reporting Standards (using accrual basis of accounting) that were adopted from the pronouncements issued by the International Accounting Standards Board.

Our audited financial statements are available on www.cleanairinitiative.org/portal/annualreport.

### Financial Overview

#### Support and Income (in thousands) - total is US$ 2.168 million

- **Grants** ($2,077.0) 95.8%
- **Membership Donations** ($90.0) 4.1%
- **Other Income** ($0.7) 0.04%
  (includes interest income)

#### Grant Expenses for Programs and Projects (in thousands) - total is US$ 1.819 million

- **Remuneration and benefits** ($570.1) 31.3%
- **Travel and per diem** ($121.6) 6.7%
- **Trainings, seminars and workshops** ($148.7) 8.2%
- **Sub-grants to third parties** ($809.3) 44.5%
- **Support to country networks** ($61.2) 3.4%
- **Expendable equipment** ($62.1) 3.4%
- **Miscellaneous** ($45.9) 2.5%

#### General and Administrative Expenses (in thousands) - total is US$ 0.272 million

- **Remuneration and benefits** ($63.8) 23.5%
- **Travel and per diem** ($38.1) 14.0%
- **Trainings, seminars and workshops** ($4.3) 1.6%
- **Office rental and utilities** ($52.1) 19.1%
- **Third party services** ($59.9) 22.0%
- **Support to country networks** ($9.1) 3.3%
- **Depreciation and amortization** ($25.3) 9.3%
- **Miscellaneous** ($19.5) 7.2%

### Statement of Support, Income, Expenditures and Fund Balance

For year ended 31 December 2009

<table>
<thead>
<tr>
<th>Description</th>
<th>Unrestricted /a</th>
<th>Restricted /b</th>
<th>Total</th>
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<td>-(41,762)</td>
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</tbody>
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/a Unrestricted funds are those without donor-imposed restrictions and can be used for general operating expenses of the Center.

/b Restricted funds are for projects undertaken under grants and support with donor-imposed restrictions. The Center is restricted from using the fund for purposes other than its intended use.
When: 9 to 11 November 2010
Where: Suntec Singapore International Convention & Exhibition Centre
Theme: Air Quality in a Changing Climate
Topics:
- Sustainable Cities and Urban Development
- Air Quality and GHG Monitoring and Impacts (covering all sources)
- Air Quality Management & Climate Change Mitigation (covering all sources)
- Transport Systems and Modes
- Clean Fuels and Vehicles
- Industry and Other Sources

Registration fee: US$350 (early-bird, until 31 August), US$450 (regular)

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