Clean Air in Viet Nam: Summary of progress on improving air quality

Country Network Viet Nam
Viet Nam Clean Air Partnership
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About CAI-Asia

The Clean Air Initiative for Asian Cities (CAI-Asia) was established as a joint initiative by the Asian Development Bank, World Bank, and the United States – Asia Environmental Partnership (a project of USAID) in 2001.

CAI-Asia promotes innovative ways to improve air quality of Asian cities by sharing experiences and building partnerships. This multi-stakeholder initiative has three parts:

- The CAI-Asia Center, a regional, Philippines-based non-profit organization as the implementing arm of CAI-Asia
- The CAI-Asia Partnership, a United Nations Type II partnership, with over 120 member organizations
FOREWORD

Air quality management (AQM) is still a major challenge in Asia. The fast growing Asian economies and continued urbanization have increased the demand for mobility and energy in the region, resulting in high levels of air pollution in cities from transport, industry and other sources. The World Health Organization estimates that air pollution causes over half a million premature deaths per year, leaving the urban poor particularly vulnerable since they live in air pollution hotspots, have low respiratory resistance due to bad nutrition, and lack access to quality health care.

We are, therefore, pleased to present you with an update on the efforts and progress to improving air quality in Viet Nam, which also focuses on related areas, most importantly health, climate change, transport and energy management. This summary report was prepared by the Viet Nam Clean Air Partnership, which is hosted by the Swiss - Vietnamese Clean Air Program. This report presents

- Trends in air quality and climate change
- The Clean Air Network of Viet Nam, including main achievements and challenges
- Responses to address air pollution in Viet Nam including policies, programs/projects, training courses, and several case studies of concrete actions.

You are invited to discuss with us achievements and challenges of Viet Nam at the Roundtable of Southeast Asian Countries on Thursday, 13 November, 10:30 – 12:00, at the Better Air Quality (BAQ) workshop 2008 in Bangkok, under the theme “Air Quality and Climate Change: scaling up win-win solutions for Asia.”

You can visit our country web page on www.cleanairnet.org/vcap for more information, or contact us directly. We welcome your support to help improve air quality in Viet Nam!

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1. TRENDS IN AIR QUALITY AND CLIMATE CHANGE

This chapter explains the drivers of air pollution and climate change, trends in air pollutant levels and greenhouse gas emissions, and impacts from air pollution.

1.1 Drivers of Air Pollution and Climate Change

Viet Nam is rapidly urbanizing. By 2050, an estimated 57.01% of people will be living in cities, compared to 20.25% in 1990. Bigger cities put more pressure on available resources, including clean air.

As the GDP of Viet Nam continues to rise, energy consumption is also increasing. Energy consumption increased over four-fold from 0.280 quadrillion BTU in 1990 to 1.225 quadrillion BTU in 2005.

Figure 1. Urbanization increase between 1990 to 2005 and forecast up to 2050

Figure 2. Energy Consumption Increase compared to GDP between 1990 and 2006
The number of vehicles in the country also increased rapidly, with motorbikes increasing more than 400% from its 1996 to its 2006 level.

![Graph showing number of vehicles](image)


**Figure 3: Number of cars and motorbikes operating annually in Viet Nam**

### 1.2 Air Pollutants and Greenhouse Gas Emissions

The main pollutants in Vietnamese cities are the same as most of Asian cities – particulate matter (i.e. those with diameter of 10 microns or smaller, PM$_{10}$, or 2.5 microns or smaller, PM$_{2.5}$), Sulfur dioxide (SO$_2$), Nitrogen oxides (NO$_x$), Carbon monoxide (CO), ozone, volatile organic compounds (VOCs), and lead. The main pollutant of concern is PM$_{10}$. While the average national levels of PM$_{10}$ in Viet Nam cities have shown decreasing tendencies since 1999, they continue to exceed both WHO guidelines and national standards. The highest concentrations of particulate matter were found in big cities on congested roadways and at construction sites. SO$_2$ levels, on the other hand, are within national standards have shown an increasing tendency with some drops in 2003, 2004 but increasing again in 2005. Average NO$_2$ levels are both within national standard and WHO guidelines.
Clean Air in Viet Nam

Figure 4. Trends in PM$_{10}$ levels in Hanoi and Ho Chi Minh between 2003 and 2006

Figure 5. Trends in SO$_2$ levels in Hanoi and Ho Chi Minh between 2003 and 2006

Figure 6. Trends in NO$_2$ levels in Hanoi and Ho Chi Minh between 2003 and 2006
Greenhouse gas emissions (expressed as Carbon dioxide (CO2)-equivalents) from fossil fuel use in Viet Nam, are rapidly increasing. In 1990, GHG emissions were 21,403.743 million tons, in 2004 this was 98,663.261 million tons.

![CO2 Emissions and Economic Growth](image)

**Figure 7. Trends in greenhouse gas emissions (CO2-equivalents) from fossil fuel combustion for Viet Nam between 1990 and 2004**

### 1.3 Impacts of Air Pollution

In Viet Nam, there are some studies which tried to estimate the health effects of air pollution. The Labour, Health and Environmental Hygiene Institute accounted that annually 626 deaths and 1,500 incidences of respiratory infection can be attributed to air pollution. The institute also estimated that air pollution costs US$20 million for Hanoi and $50 million for HCMC annually. A recently concluded project in Ho Chi Minh City confirmed the strong linkages between air pollution and health of children in the city. The study observed that the risk for acute lower respiratory infection (ALRI) in children aged 5 and below increased with increasing concentration of pollutants – PM$_{10}$, SO$_2$, NO$_2$ and ozone. The correlation were strongest for ozone and NO$_2$, both of which are traffic-related pollutants,
2. CLEAN AIR NETWORK VIET NAM

2.1 Introducing the Clean Air Network Viet Nam

The Clean Air Network in Viet Nam is the Viet Nam Clean Air Partnership (VCAP). It was formed in 2006 by the Viet Nam Association for Conservation of Nature and Environment (VACNE) to mobilize individuals and social organizations in Viet Nam to initiate and participate in activities, which improve air quality, protect public health, and promote the country’s sustainable development.

VCAP’s objective is to enhance air quality knowledge and public advocacy by providing expertise, consultancy, and networking opportunities to its members and other interested partners.

The main tasks of VCAP are:

- Raising awareness and disseminating knowledge on air quality management
- Participating in the development and implementation of policies, laws, and measures to manage air quality
- Participating in research and technology development for air quality management
- Participating in the implementation of national and international projects to improve air quality management in Viet Nam

VCAP keeps track of air quality drivers, trends, impacts and responses. In doing so, it works together with a wide range of stakeholders with an interest in better air quality in Viet Nam and who have a role to play in achieving this: government agencies, development partners (including donors, foundations, development agencies), civil society (including non-governmental organizations or NGOs, academia, research institutes) and the private sector. Stakeholder groups are shown on the next page.

2.2 Main Achievements and Challenges

The main achievements in improving air quality in Viet Nam since 2006 are

- **A great success in phasing out leaded gasoline:** Since 1 July 2001, when the Prime Minister's Directive No. 24/2000/CT-TTg of 23 November 2000 on implementation of the use of unleaded gasoline in Viet Nam took effect, the content of lead in the air country-wide has dropped significantly and in nearly all cities, including Ho Chi Minh City, the mean month level of lead in the air remains under the permitted standard.

- **Application of a number of measures to reduce air pollutants:** These measures have been implemented such as: intensifying emission control of motor vehicles in road transportation, especially in big cities; improving transport management and enhancing public transportation in cities; and issuing strict standards for the manufacturing sector and encouraging manufacturers to apply cleaner technology in production. Based on the Environment Protection Law of 2005, many cities have issued regulations for particulate matter emission control in construction and transport resulting in a remarkable reduction of particulate matter levels in streets.
• **Step-by-step elimination of motor vehicles that don't meet standards:** From 2001 to 2006, the Government had issued three decrees regulating the age limits of cars, buses and trucks. In the past three years, 44,500 old cars of all types have been excluded from use according to legal stipulations on car age limits. This has contributed significantly to the reduction of air pollution.

• **Promulgation of national standards on air quality:** In 2005, four national air quality standards, namely on ambient air quality, on maximum permitted levels of some toxic gases in ambient air, on permitted levels of particulate, organic, and inorganic matter in industrial emissions, have been promulgated.

• **Urban air quality monitoring has taken place:** Air quality monitoring in Viet Nam started in 1994. Since 2000, continuous air quality monitoring stations have been gradually introduced to some major cities and by now, for example, there are five stations in Hanoi, nine in Ho Chi Minh City, two in Hai Phong, and two in Da Nang. In early 2007, the Government issued a decision approving the "Master Plan of the National Natural Resources and Environment Monitoring Network to 2020" including air quality monitoring. According to the Master Plan, by 2020, there will be 58 automatic continuous monitoring stations nationwide linked together in a network to monitor air quality in the whole country.

Despite of progress made, several challenges remain, the most important ones being

• **Functions, responsibilities, and organizational arrangement in urban air quality management are unclear:** In all levels of the environmental management system, at MONRE as well as in other ministries, there is no clear allocation of responsibility for air quality management. In legal documents on environment protection, specific regulations for urban air quality are still lacking.

• **Plans for air quality management are lacking:** At the national level, there is no plan on air quality management and the same situation is in provinces except Hanoi. Hanoi, with the support of SVCAP, is working on the City's plan on air quality management.

• **Emission sources monitoring and auditing systems are weak:** The Plan for the National Monitoring Network has not been really introduced into practice; the Network is lacking modern equipment, data, investment, and effective QA/QC system. The auditing of polluting sources has not been widely applied in provinces but only within limited scope of some research and pilot projects.

• **Investment is small and inadequate:** According to data from the Ministry of Planning and Investment, in the period of 1996 - 2005, the official development assistance (ODA) projects for air quality protection are worth only US$276.2 million and the ratio of the invested value for urban air quality is of 7.1%.

• **Research and education don't meet requirements:** Recently, the number of people graduating from environmental disciplines is continuously rising but still is not meeting the requirements. There are still few research studies on air quality and no comprehensive assessment of the state of air quality in general and state of urban air quality in particular. Many important aspects of air quality research are still neglected. Community participation in air quality protection is limited due to low awareness and knowledge on the matter and due to inadequate support from government agencies.

http://www.nea.gov.vn/ONKK/Thuctrang.html
Figure 8. Clean Air Network of Stakeholders in Viet Nam
3. **RESPONSES TO IMPROVE AIR QUALITY**

Countries and cities can address air pollution in several ways, such as, policies, programs, training courses, and on-the-ground measures.

### 3.1 Policies

Viet Nam has a range of policies relevant to air quality management. Policies can be directly aimed at improving air quality, or policies cover related areas (such as health, climate change, energy management, environment) or sectors (such as transport, industry, construction) that affect air pollution indirectly. The most important ones are:

- **Directive of the Prime Minister on the use of unleaded petrol in Viet Nam issued in 2000**: It's a measure to implement a paragraph in the Environmental Protection law on "Road and urban traffic safety and order" and a provision of the successive Governmental decree on "Ban of motor vehicles using lead gasoline or emitting heavy smoke to pollute environment." From 1 July 2001, the whole Viet Nam has switched to the use of unleaded gasoline.

- **National Strategy for Environmental Protection until 2010 and Vision towards 2020 approved by the Prime Minister in 2003**: In the Strategy, there are 36 Priority programs to be implemented including one program on settling seriously polluting factories, three on waste management, three on clean technology, and one on urban air quality improvement.

- **Strategic Direction for Sustainable Development in Viet Nam (Viet Nam Agenda 21) promulgated by the Prime Minister in 2004**: In Chapter 4 on Priority areas there is a chapter on reducing air pollution in urban and industrial areas.

- **Law on Environmental Protection proclaimed by the President of Viet Nam in 2005**: In Chapter VIII on Waste management there are 4 paragraphs on Management and control of particulate matter, gas emissions, noise, vibration, light, and radiation.

- **Roadmap for Application of Emission Standards to Road Motor Vehicles approved by the Prime Minister in 2005**: According to this Roadmap, EURO-II is applied for second-hand automobiles imported to Viet Nam from July 2006 and for all domestically produced or imported automobiles from July 2007. By the year 2025, all vehicles in Viet Nam are required to satisfy EURO V.

- **National Energy Efficiency Program 2006-2015 approved by the Prime Minister in 2006**: The Program includes activities to encourage, promote, and propagate energy efficiency among the public; scientific and technological activities and management measures in order to synchronously implement the effective use of energy in entire society.

- **Comprehensive Program on Ho Chi Minh City Air Quality Improvement issued by HCMC People’s Committee in 2006**

- **Decree on environmental protection fee on gas emission** is being drafted by MONRE for submission to the Government

- **National strategy on environmentally sustainable development in transport to 2020** is being developed by MONRE

- **National strategy on reducing, reusing, and recycling to 2020** is being developed by MONRE

- **Emission control program for vehicles operating in major cities** is being drafted by the Viet Nam Register for submission to the Government
3.2 Programs/projects and Training Courses

The CAI-Asia Center and the CAI-Asia Country Networks compiled a Compendium of air quality management (AQM) organizations, programs/projects, and training courses, which was published in January 2007. For Viet Nam, 58 programs and projects were identified. In Asia, 28 air quality training courses delivered on a regular basis were identified. For more information see www.cleanairnet.org/compendium.

3.3 Case Studies of Concrete Actions

Phasing out lead petrol from use in Viet Nam

On 23 November 2000, the Prime Minister promulgated the Directive No. 24/2000/CT-TTg on the use of unleaded petrol, to take effect from 1 July 2001. According to this Directive, the Ministry of Transport (MOT) takes the leading role in implementing the Directive. MOT, together with the Ministries of Industry and Trade and of Natural Resources and Environment have drafted supporting regulations and standards and collaborated with provincial leaders and other stakeholders to propagate the idea and to ensure the timely enforcement of the Directive.

Since 1 July 2001, the levels of lead countrywide in the air in urban areas have dropped significantly.

While the levels of lead in the air have dropped, with rapidly increasing number of motor vehicles, the air in urban areas have become more and more polluted by particulate matter, benzene, and noise from transport. At present, there are many efforts from state agencies to control emissions from motor vehicles, namely, the Roadmap for Application of Emission Standards to Road Motor Vehicles approved by the Prime Minister in 2005 and Emission control program for vehicles operating in major cities being drafted by the Viet Nam Register under MOT.
Cleaning up seriously polluting establishments

On 22 April 2003, the Prime Minister promulgated the Decision No. 64/2003/QD-TTg approving the Plan on Thorough Settling Seriously Polluting Establishments. The Ministry of Natural Resources and Environment (MONRE) took the lead in implementing the Decision. MONRE, together with other line ministries issued relevant legal documents and mechanisms to support the implementation of the Decision.

Seriously polluting establishments were required to set up plans to apply measures to stop or reduce the pollution that the establishments cause to the environment within a time line stipulated in the Decision and submit these plans to relevant ministries for approval. The Plan comprises of two phases: In the first phase (2003-2007) the work focused on the 439 most polluting establishments and in the second phase (2008-2012) to resolve the pollution problem in the remaining 3,856 seriously polluting establishments in the list up to 2002 plus new cases.

http://www.nea.gov.vn/ONKK/Thuctrang.html

Sources:
http://www.nea.gov.vn/luat/toanvan/Chithi_24-2k_CT-TTg.html
Up to December 2006, after three years of the Plan’s first period implementation, 145 establishments (33% from total 439) are no longer polluting the environment, 225 establishments (51.2%) have been applying measures to reduce pollution. The achieved results have contributed to the improvement of environmental conditions in general and air quality in particular in Viet Nam.

Based on what was learned from implementing the first phase (2003-2007), there is a need to carry out comprehensive measures to clean up all remaining seriously polluting establishments.

Sources:
http://www.nea.gov.vn/luat/toanvan/QD_64-03_QD-TTg.htm
http://www.nea.gov.vn/ONKK/Thuctrang.html

Saying “no” to polluting vehicles

Three main regulations clearly say “no” to polluting motor vehicles. These are:

- The Government Decree No. 92/2001/ND-CP on the conditions for passenger transport (promulgated on 11 December 2001). This Decree was later replaced by the Decree No. 110/2006/ND-CP of 28 September 2006 on the same topic.
- The ban of self-made vehicles which is being gradually implemented in the whole of Viet Nam.

After three years of implementing the Decree No. 23/2004/ND-CP, more than 44,500 old cars of all types have been excluded from use. Implementation of the three above-mentioned decrees and the recent ban of self-made vehicles have contributed significantly to the reduction of air pollutants.

Exclusion of old cars from operation according to the Decree No. 23/2004/ND-CP was carried out in three phases. The last phase started in February 2007 and the provisions on age limits of cars stipulated in the Decree have been fully applied. The efforts of authorities now are focused on the full enforcement of these provisions and of the ban of self-made vehicles.
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