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CNG as transport fuel in Asia, present situation and future outlook

CAI - Asia Secretariat, ADB
October, 2002

CAI - Asia Goals

“Air pollution puts the lives of Millions at risk in Asian cities”

- Sharing knowledge and experiences on air quality management
- Capacity building
- Improving policy and regulatory frameworks at the regional level
- Piloting projects to encourage innovation
- Assisting cities in implementing integrated air quality management systems

Create an Air Quality Management Community in Asia
Governance Structure

**General Assembly**

City and national Government agencies
- South East Asia: MMDA – Rogelio Uranza (chair)
- East Asia: SEPA- Luo Gaolai
- Mekong: PCD Thailand – Supat Wangwongwatana
- South Asia: CPCB India – Dilip Biswas

**Coordinating Committee**

**NGOs and Academe**
- NGOs: CSE Anumita Roychowdhury (co-chair)
- Academe: CRAES Tang Dagang

**Secretariat**

Private Sector
- Ford Motor Company
- Oxonica: Ron Hazrika
- Shell: Eliseo Santiago

**Development Agencies:**
- World Bank: Jitu Shah
- Asian Development Bank: Charles Melhuish
- US-AEP/EPA – Dennis Žvinakis

CAI - Asia Info Channels

http://worldbank.org/cleanair/caiasia

CAI - Asia Discussion Listserv
join-cai-asia@lists.worldbank.org

http://adb.org/vehicle-emissions
Training and Capacity Building

**CATNet-Asia**

Objectives: CATNet-Asia will assist training organizations in Asia to improve curriculum, training materials on air quality management. It will also help training the trainers.


**Distance Learning**

Objectives: Modular training course for decision makers in Asia dealing with all aspects of Air Quality Management

Contact Paul Procee: pproce@worldbank.org

Pilot Projects

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>address significant problem faced by several of CAI-Asia members</td>
<td>Health impact of pollution in Asian Cities</td>
</tr>
<tr>
<td>promote innovative approaches to air quality management</td>
<td>Vehicle emission factors</td>
</tr>
<tr>
<td>implementation or research</td>
<td>Costs of Upgrading of diesel refineries to reduce sulfur</td>
</tr>
<tr>
<td>CAI-Asia technical supervision and active involvement of members in implementation</td>
<td>Test protocol for fuel additives</td>
</tr>
</tbody>
</table>

Criteria Examples

- Regulatory framework for CNG usage in Asian countries
## Regional Policies

CAI Asia supports formulation of regional policies and standards aimed at improving air quality management and reduction of sources of pollution.

### Examples

| Strategic Framework for Air Quality Management in Asian Cities (in cooperation with APMA project) | Adoption of harmonized emission standards across Asia for new vehicles and associated fuel standards to bring Asia in line with European standards by 2010 |

## Context for CNG in Asia

- Growing concerns on environmental impact of mobile sources of pollution
- Growing pressure on conventional fuels in the region, several (large) countries growing dependence on imports
- Several countries have considerable proven resources of Natural Gas
- Use of natural gas frees up oil for export or other uses in those countries that have both oil and gas
- Considerable lobbying for the use of Natural gas, as a clean fuel, by range of groups
Current status selected Asian countries

- Relevant countries in Asia are Bangladesh, China, India, Indonesia, Malaysia, Pakistan, Philippines, Thailand and Vietnam.
- Progress in advancing through stages of maturity curve is relatively slow
- Main obstacle is to progress beyond the anchor phase
- Pakistan has come the farthest in maturity curve, largest number of filling stations and NGVs in Asia
- CNG will be niche fuel in the next decade in Asia, with intensive use in selected locations
**NGVs in Asia**

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
<th>Enabling Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>5,000 vehicles 9 refilling stations</td>
<td>Banning of current Vehicles, e.g. India and Bangladesh</td>
</tr>
<tr>
<td>China</td>
<td>36,000 vehicles 70 refilling stations</td>
<td>Incentives for Conversion, eg. Thailand</td>
</tr>
<tr>
<td>India</td>
<td>84,150 vehicles 116 refilling stations</td>
<td>Pricing/subsidies</td>
</tr>
<tr>
<td>Indonesia</td>
<td>3,000 vehicles 12 refilling stations</td>
<td>Infrastructure provision</td>
</tr>
<tr>
<td>Malaysia</td>
<td>3,700 vehicles 18 refilling stations</td>
<td></td>
</tr>
<tr>
<td>Pakistan</td>
<td>265,000 vehicles 310 refilling stations</td>
<td></td>
</tr>
<tr>
<td>Philippines</td>
<td>468 vehicles, 5 refilling stations</td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td></td>
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<tr>
<td>Vietnam</td>
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</tbody>
</table>

**Concerns regarding stimulation measures**

- Banning (diesel) vehicles: public transport capacity concern and no guarantees that environmental benefits are captured - *in stead of banning technology issue stricter emission standards*
- Conversion incentives: no guarantees that environmental benefits are captured - *ensure that appropriate environmental monitoring is done*
- Pricing: subsidies will endanger sustainability of fuel switch - *carry out proper cost benefit analysis, and inter-fuel taxation assessment*
- Infrastructure: can be perceived as indirect subsidies of CNG
Alternatives to Natural Gas to reduce mobile source emissions

- Diesel powered vehicles: lowering of sulfur and equipping vehicles with advanced emission control devices
- Gasoline vehicles: cleaner fuel and advanced emission control devices
- All vehicles: better maintenance
- Step change in technology move away from internal combustion technology to advanced vehicle technology
- Influence modal split in favor of public transport
- Effective Transport management and Transport Demand Management

Criteria for decision maker in Asia

- Availability: is it there and what are competing uses of Natural Gas?
- Cost: infrastructure (pipelines and filling stations), NGVs and their operating cost
- Environmental impact: will environmental benefits be realized?
- Practicability - ease of use - safety
CAI - Asia involvement with CNG and NGV’s

- Primary concern of CAI-Asia is air quality
- Natural gas has potential to reduce pollution
- CAI-Asia emphasis in next years: improve data on CNG and NGV in Asia and make widely available
- Study environmental impact of different types of NGVs: conversions and “virgin NGVs”
- Stimulate debate on CNG-NGV versus alternatives to promote informed decision making
- Strengthening of regulatory framework for CNG through PPIAF project

Role of development agencies in promoting CNG and NGV

- Promote the formulation of integrated fuel strategies
- Capacity building to regulate fuel sector
- Promote exchange of information among regions and countries and support awareness raising
- Promote and facilitate studies on environmental performance of different types of NGVs
- Financing development of infrastructure
- Financing initial NGV fleet

ADB CNG project in Dhaka