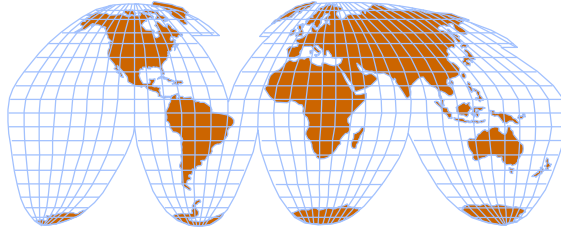


Role of CNG Vehicles for Air Quality Management



The World Bank

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Mission Statement: World Free of Poverty

- To fight poverty with passion and professionalism for lasting results
- To help people help themselves and their environment by providing resources, sharing knowledge, building capacity, and forging partnerships in the public and private sectors

Broader Context

- Is air pollution a significant problem compared to other issues?
- What are the main pollutants of concern (based on impacts)?
- Does transport sector contribute significantly to the problem?
- What are the options available: transport management, technology, fuel?
- What are the cost and benefits of NGV compared to other options?

Advantages of NGVs

ADVANTAGES

- Much lower PM and NMHC emissions
- Diversification of energy sources if natural gas is indigenous
- Quiet Operation, less odor

DISADVANTAGES

- Expensive infrastructure (distribution, storage, etc.)
- Higher vehicle capital cost
- Shorter driving range
- Much heavier fuel tank, reducing fuel economy and increasing breaking distance
- Possibly higher maintenance costs, potentially more performance and operational problems
- Lack of trained personnel for proper maintenance in developing countries

Conditions for Success

- ◆ Cheap source of natural gas (domestic reserves)
- ◆ NG distribution pipeline in place for other use
- ◆ Adequate safety and performance standards that are monitored and enforced
- ◆ Inter-fuel taxation policy favorable to automotive natural gas over the fuel it is intended to replace – very difficult for diesel in nearly all countries, and especially in developing countries
- ◆ Proper regulatory framework – a fair and level playing field for all stakeholders
- ◆ A champion for coordinating activities

Developing Country Limitations

- ◆ Competing demands on scarce resources
- ◆ Data needed for cost-benefit analysis missing
- ◆ Inter-fuel taxation unfavorable to replacement of diesel by natural gas
- ◆ Poor culture of vehicle maintenance ⇒ NG vehicles are more difficult to service and maintain
- ◆ Public transport sector reform is needed to make switching to CNG of buses and other vehicles viable: inefficient, cash-strapped bus operators in no position to handle fuel switching from diesel to natural gas
- ◆ Conversion of vehicles in poor condition
- ◆ Poor conversions

Role of Fuel Pricing

- ✦ Fuel prices set by the government in many developing countries.
- ✦ Diesel and kerosene are considered “social” fuels, and are taxed little or subsidized.
- ✦ Gasoline is generally considered a fuel for the well-off, and is taxed heavily to compensate for low or negative taxes on other fuels.
- ✦ CNG can replace gasoline but that leaves untouched diesel, the primary source of fine PM pollution.
- ✦ CNG replacing diesel will need financial support, but many competing demands on government revenue
- ✦ If natural gas is heavily subsidized for certain industries, such as fertilizer manufacture, this makes making natural gas available to transport even more difficult.

Relevant Bank Reports and Notes

- South Asia Urban Air Quality Management Briefing Note No. 2. 2001. “International experience with CNG vehicles”.
- South Asia Urban Air Quality Management Briefing Note No. 3. 2001. “How can urban bus policy reduce air pollution?”.
- Air Pollution from Motor Vehicles - Fiaz et al. 1996
- Lessons learned from experience in other parts of the world

Conclusions

- Ensure long-term sustainability based on local partnerships/resources
- Consider socio-economic impacts of environmental/transport policies, especially on poor
- Focus on win-win options in transport sector: social + economic + environmental benefits