



Munich Personal RePEc Archive

Critical Analysis of Stakeholders Involvement and Environmental Impact: Conversion of Crude Oil Based Auto Rickshaws to CNG in Ahmedabad

Vrajlal Sapovadia and Sweta Patel and Akash Patel

Shanti Business School, Ahmedabad, India, LJ Institute of
Management Studies, Ahmedabad, India, Institute of Chartered
Accountants of India, New Delhi, India

3 April 2015

Online at <https://mpra.ub.uni-muenchen.de/63582/>
MPRA Paper No. 63582, posted 11 April 2015 10:33 UTC

Critical Analysis of Stakeholders Involvement and Environmental Impact: Conversion of Crude Oil Based Auto Rickshaws to CNG in Ahmedabad

Dr. Vrajlal Sapovadia, Akash Patel, Dr. Sweta Patel

Introduction:

Transportation is vital driver of economic growth, socialization and development. The fuel efficiency of vehicles across the globe is taking centre stage within the context of economic viability, technical feasibility, public health, climate change and reducing dependence on exhaustible energy resources. Growing economies and urban centers in particular are struggling to optimize conflicting interests. India's economic growth and urbanization pace have drawn attention of the government over environmental effects on public health. As per recent report¹ released, India's high air pollution, ranked by the World Health Organisation among the worst in the world, is adversely impacting the lifespan of its citizens, reducing most Indian lives by over three years. India has the highest rate of death caused by chronic respiratory diseases anywhere in the world. Pollution is one of the reasons to lead respiratory diseases.

The Government of India adopted a roadmap to clean the air of vehicular air pollution in cities after the Supreme Court reprimanded it for laxity in curbing air pollution. The Central Government appointed an expert committee in September 2001 under the chairmanship of Dr. R.A. Mashelkar, Director-General, Council for Scientific and Industrial Research (CSIR), to suggest a roadmap taking the country to better urban air quality levels. The Government announced 'The National Auto Fuel Policy' in 2003 for introducing vehicular emission norms in the country by 2010. The policy proposed that liquid fuels will remain the main auto fuel throughout the country and suggested the use of CNG & LPG² in cities affected by higher pollution levels to enable vehicle owners have the choice of the fuel and technology combination.

The city of Ahmedabad is 7th largest Indian urban agglomeration (6.36 million, 2011 census). The growths trends of Ahmedabad's critical demographic factors during 1975 to 2011 are disproportionate. The city area have grown by 2.36 times, road length have increased by 2.5 times, population 3.1 times while vehicles have grown 52 times. In 2001, Ahmedabad was ranked number four among the most polluted cities in India, amongst many reasons; largely due to the large number of vehicles puking clouds of smoke, vehicles racing ahead on potholed and narrow roads, polluted air that left the eyes burning. Auto-rickshaws make noise, exit heavy black fume from the silencers because most of these auto-rickshaws used to mix petrol with kerosene, as it is subsidized hence cheaper. These cause clouds of fume, the people on and around road seem their tearing eyes, coughing and red faced. The emission resulting from the burning of the adulterated fuels mixture had a remarkably high percentage of carbon monoxide, raising the pollution level of the city to a large extent. In line with The National Auto Fuel Policy; the state & local governments' series of imitative coupled with civil society brought substantial changes in the urban transportation. Currently the auto rickshaw roaming in and around Ahmedabad

¹ Economic & Political Weekly (February 21, 2015)

² Compressed Natural Gas & Liquefied Petroleum Gas

exceeds 100,000, but due to mandatory shifting of petrol to CNG auto rickshaw have resulted into cleaner city.

Rationale of the study:

In 2003, there were 70,000 auto rickshaws including 20,000 units were older than 15 years. Majority of the auto rickshaw owners' livelihood was dependent on this sole income source. Their economies were fragile. Conditions of auto rickshaws were pitiable as their owners. This author witness several incidences of driver collecting meagre amount of fare in advance from sharing passengers before the trip, so vehicle can be filled with fuel. Having no money in the pockets as small as rupees 10 to replace new plug, drivers might short circuit the old plug knowingly it will consume more fuel. Drivers used to stay in slums with no or low education. Large number of auto rickshaws might buy against loan & credit from private lenders, obviously on exorbitant interest rates. In spite the drivers knows that mixing fuels like kerosene & solvent with petrol will shorten life of auto rickshaw, out of economic compulsion they were doing so. Adding salt to the wounds, they have to pay regular *hafta*³ to policemen to run sharing rickshaws accommodating more passengers than the permitted limit of 3. Just to give the glimpse suffice to know how difficult it was to replace petrol to CNG rickshaws in such large number as 70,000.

Necessary infrastructure, supplies of gas & CNG kits, finance, culture, labour shifting, unemployment, social activists and other conflicting interests were major hurdles for the governments to make this shift possible.

The present study aims to understand the prevailing under current, forces, strategies, policies & challenges faced by various stakeholders. The conversion of entire fleet of auto rickshaws to CNG was successful in the 5 years. Along with other measure of clean energy, Ahmedabad made remarkable make over. In 2011, Ahmedabad received Sustainable Transport Award, which is given annually by the Institute for Transportation Development and Policy (ITDP) in recognition of progress in increasing mobility for all residents while reducing transportation greenhouse and air pollution emissions and improving safety and access for cyclists and pedestrians. For launching three pronged strategy, Ahmedabad transportation received Lee Kuan Yew World City Prize Special Mention in 2012.

Significance of the Study:

The city's conditions are improved, but still Ahmedabad is not considered clean energy and seamless traffic city. The present study may give directions to the citizens, civil society, researchers & government in this endeavor.

Key Questions:

1. To recognize the factors and timing that stakeholders realized for requirement to shift
2. To identify key players in the conversion of crude oil auto rickshaws to CNG
3. To identify key factors which influenced the conversion process through unstructured governance structure

³ bribe instalment

4. What was the key selling point to address each stakeholder cluster's concern
5. Post problems in CNG Auto Rickshaws
6. Public, passengers & commuters response after introduction of CNG auto rickshaws
7. Contribution to air pollution by various sources
8. How this conversion would have been made better
9. What could be the next phase of passenger movement to make city more cleaner
10. What are other strategies of reduction in emission due to small transport vehicles
11. Enhancing capacity of cities to improve mobility with lower CO₂ emissions
12. Evaluating environmental cost benefits
13. Delineating an enabling environment for coordinating policies at the national level to achieve a sustainable transport system in other urban centers

Research Methodology:

The research will use secondary & primary data. Relevant government policies, technical reports and available literature will be reviewed. Questionnaires will be administered to various major stakeholders to collect empirical evidences. Appropriate statistical techniques and research tools will be used to collect analyze, interpret & infer data.

Finding & Conclusion:

The inferences will be documented to demonstrate the way research questions were addressed. The finding & suggestion may be useful for working on future urban transport policies, and correcting the existing one in similar other urban centers in developing countries. The study can be useful to various stakeholders including civil societies, manufacturers & suppliers in marketing & financing policies, lenders, judiciary, environmentalists, town planners & researchers.

Bibliography:

Alain Bertaud and Stephen Malpezzi; The Spatial Distribution of Population in 48 World Cities: Implications for Economies in Transition; The Center for Urban Land Economics Research, The University of Wisconsin (2003)

Alwyn Sebastian and Shonali Thangiah; Compressed Natural Gas in India: Contemporizing the Delhi Pollution Case; Universal Journal of Environmental Research and Technology; Euresian Publication, Volume 3, Issue (2013)

Axay Mani, Madhav Pai & Rishi Agrwal; Sustainable Transport in India: Role of Auto Rickshaw Sector, World Resource Institute (2012)

B. Vijay Bhaskar and Vikram M. Mehta; Atmospheric Particulate Pollutants and their Relationship with Meteorology in Ahmedabad, Aerosol and Air Quality Research (2010)

B. de la Peña and R. Albright; Catalyzing the New Mobility in Cities: A Primer on Innovative Business and Service Models; Rockefeller Foundation (2013)

Chandresh Parekh, Study of CNG & LPG Based Vehicle System in Pune & Ahmedabad, University of Pune (2007)

David T. Allen et al, Measurements of methane emissions at natural gas production sites in the United States, <http://www.pnas.org/content/110/44/> volume 110/44 (2013)

Dinesh Mohan, Rahul Goel, Geetam Tiwari & Sarath Gutikunda; Assessment of Motor Vehicle Use Characteristics in Three Indian Cities, Promoting Low Carbon Transport in India, Project supported by UNEP Risø Centre on Energy, Climate and Sustainable Development (2014)

Jaynila Vaghasiya et al; Why to Introduce Flat Fare System in Janmarg, Ahmedabad, Gujarat – A Case Study; Australian Journal of Basic and Applied Sciences, (2014)

Madhav Pai, Assessing the role of rickshaws in sustainable urban transport for Indian Cities, Transforming Transportation – India Program (2011)

Michael Greenstone, Janhavi Nilekani, Rohini Pande, Nicholas Ryan, Anant Sudarshan, and Anish Sugathan, “Life Expectancy Gains if India Reduced Particulate Matter Pollution “Economic & Political Weekly (February 21, 2015)

Saroj Kumar Sahu, Gufran Beig and Neha Parkhi, Critical Emissions from the Largest On-Road Transport Network in South Asia, Aerosol and Air Quality Research (2014)

Shukla P. R., Development & Applications of Strategic Data Base (SDB) for India, IIM Ahmedabad 2007

Improving Informal Transport: Case Studies from Asia, Africa & Latin America by Global Energy Network for Urban Settlements (GENUS), a network established and facilitated by UN-Habitat, The Energy and Resources Institute (TERI), New Delhi (2013)

Case Studies of Ahmedabad, Singapore & Yokohama; Center for Livable Cities: Urban Solutions - Issue 2, (2013)

Sustainable Public Transportation: Environmentally Friendly Mobility, International Transit Studies Program Report on the Spring 2011 Mission, TCRP Digest (April 2011)

Ahmedabad City Development Plan, Jawaharlal Nehru National Urban Renewal Mission, by AMC, AUDA & CEPT - 2006-2012

Clean Development Mechanism Project design document form (2006)

The National Auto Fuel Policy, The Government of India; <http://pib.nic.in/> (2015)

<http://utbenchmark.in/UsersidePages/CityProfile.aspx?City=1>, Ministry of Urban Development (2015)

Alternative Fuel Data Center, US Department of Energy, Energy Efficiency & Renewable Energy, http://www.afdc.energy.gov/fuels/natural_gas_benefits.html (February 2015)

<http://www.idfc.com> (2015)

<http://www.dnaindia.com> (2006)

United Nations Population Division, Population Growth in Cities (2001)