



CENTRE FOR SCIENCE AND ENVIRONMENT

STEPPING TOGETHER A Conclave of Changemakers for Clean Air and Sustainable Mobility

Jacaranda Hall, India Habitat Centre, Lodhi Road

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Briefing Note

Air pollution has become the fifth largest killer, and the seventh biggest illness burden in India as per the Global Burden of Disease report, released in 2013. Data from the new cancer registry, released by the Indian Council of Medical Research in 2013, gives chilling evidence of the high incidence of lung cancer in cities.

Rapid motorisation, the face of growth today, is also hurtling cities towards energy guzzling and heat trapping gases. Faced with the challenge of importing as much as 94 per cent, and almost all its crude oil by 2030, fuel saving and energy independence have become urgent issues.

Smaller cities are experiencing a more rapid shift to personal vehicles, as these cities have not invested adequately in public transport. Two-wheelers are the stepping stones towards personal motorisation. If two-wheelers are added to cars, the rate of personal motorisation in Indian cities has already exceeded that of the Western cities.

Indian cities, originally designed with small block sizes and high street density, did not require a car. Sprawls and flyovers are now increasing distances, while one-way streets, subways and foot overbridges are pushing people, hawkers and street activities out. On isolated roads, safety of people is compromised to protect the car. At the same time, road design to increase the speed of cars is adding to the accident risk.

Taxes, fuel pricing and parking charges do not include the cost of damage cars impose on the society. On the contrary, the mass carriers like buses are made to pay more taxes for carrying more people as the government treats it as a commercial business, and not a matter of public good to be supported.

The World Health Organisation(WHO) also considers traffic related deaths and injuries as a public health challenge, as this adds to the disability burden of the country. This demands measures to change urban design to make cities safe, more walkable, and public transport friendly to cut speed for motor vehicles.

Rethink

Urban growth around vehicles is not inevitable; it is reversible. Globally, the rich cities have started to take action to reverse the trend in travel choices. Denmark and Netherlands, where the share of bicycles had declined rapidly until 1970s, have reversed the trend. In Amsterdam and Copenhagen, the share of bicycle ridership has increased to 38 and 35 per cent respectively, by displacing cars. This is much more than the share of car trips in most Indian cities.

Similarly, New York is reclaiming space from cars to make safe pedestrian and public space, and it has one of the best public transport ridership among the US cities. London charges cars for congestion in the heart of the city and is integrating bicycles with trains. European cities are changing road and urban design to allow people to walk and cycle safely. The most dramatic turn around comes from the cities of China; Shanghai, and Beijing that have put a cap on the number of cars that can be sold in a year. The experience in Beijing has shown, the challenge of latent demand for cars; if allowed, it can bring the city to stand still. Beijing now allows 240,000 new cars to be sold in a year, as opposed to 800,000 cars sold in 2010. But the actual demand for cars is 1,515,449.

The demand for restraint on personal vehicle based mobility will get even sharper, as clean air and climate change policies begin to get more aggressive with time.

Changing policy in India

India has also begun to reflect the rethink. The National Urban Transport Policy (NUTP) has set the principle that cities should plan for people and not vehicles. The central assistance for bus funding under the Jawaharlal Nehru National Urban Renewal Programme (JNNURM) is tied with reforms based on principles of building options for cars and vehicle restraint as codified in NUTP. The judiciary from time to time has upheld the principle of restraint on motorisation. In 2004, the ongoing public interest litigation on air pollution, Harish Salve, the *amicus curiae* for the case, had referred a statement of concern from the Centre for Science and Environment (CSE) on the need for second generation reforms to restrain motorisation, and to sustain change for clean air into an interim application.

These trends set us on a search for evidence of action, and change in Indian cities. What are cities doing to turn the tide? CSE rolled out a rapid opinion poll to capture public perception and opinion. Several stakeholder consultations were organised in different cities, and on a regional scale, and visits were made to cities to gauge the work being done country wide.

This initiative has focused on actual policy decision and action in different areas of interventions including urban air quality, public transport, walking and cycling, intermediate public transport, and car restraint initiatives including parking and fiscal measures. A composite action in all these areas is needed for the cities on the sustainable mobility track. It considered both recent action as well as any action taken to protect the strength of the city.

Public opinion poll

The summary results of the opinion poll show that most people are unhappy about the air quality, public transport and facilities for walking and cycling.

- **Urban air quality:** About 54 per cent in Delhi, 79 per cent in Kolkata, 89 per cent in Jaipur, 87 per cent in Bengaluru, 91 per cent in Mumbai, 71 per cent in Chennai and 84 per cent in Hyderabad have said that air quality is worsening in their city. 75 per cent of all respondents from all surveyed cities feel that air quality is getting worse.
- **Government efforts to improve public transport:** 63 per cent in Delhi have described the government efforts as good, because of the visible change in the quality of buses. Approximately 46 per cent in Bengaluru, 23 per cent in Chennai, 22 per cent Mumbai, and 15 per cent in Hyderabad have considered the official efforts as good.
- **Government efforts to improve walking and cycling infrastructure:** In this case, majority have ranked the efforts as average and poor. About 83 per cent in Delhi, 89 per cent in Bengaluru, 91 per cent in Mumbai, almost every one in Kolkata, and 86 per cent in Chennai, have rated the government efforts as average and poor.
- Overall, 81 per cent of the all the respondents from the surveyed cities have held the rising number of vehicles as the major contributor to air pollution.

It is however worthwhile to note that there is also poor understanding of the positive policy action and the guiding principles that are being carried out for course correction. This is because of poor communication of the trends. Building this knowledge is also important for building momentum for positive policy action.

GOOD NEWS

Cities in action: A survey

The survey collated the quantitative and qualitative indicators of good practice for all the domain areas, which were filtered from the emerging policy and best practices locally and globally. The biggest barrier to such an assessment is poor data, and lack of information in the public domain.

The assessment has taken note of the several catalysts; the community actors, the judiciary and executive action. Their relative importance varies across cities. But this is a very important part of the process. Focus is on the final decision and change.

Action in mega and big metros is more layered, diverse and extensive. This is partly because of the attention they have, investments they have drawn especially the capital cities, and also these cities have more strident and aggressive public opinion and media pressure compared to smaller cities

Initiatives in smaller cities is often singular or limited in scope but with strong potential. Several domain areas, such as car restraint policies like parking or fiscal measures show very limited and small number of action. But walking and cycling have a number of community led initiatives across cities catalyzing some policy move. Experiences with buses also vary across the cities.

Action on urban air quality

Air quality assessment is perhaps the most extensive data generation exercise of the government, both at the national and state level. Over 227 cities are part of the monitoring grid. But the role of the air quality monitoring agencies is also largely confined to industrial pollution mitigation and

not so much urban air quality mitigation in cities. By convention, vehicular emissions are not even within their ambit of control.

This assessment has therefore asked, how do cities compare in their ability to monitor air quality for public health risk assessment, assess the sources of the problem, and have the ability to coordinate interdepartmental action to prepare and supervise implementation of clean air action plan to meet public health objectives in the city.

Delhi

Real time monitoring: Delhi has the largest capacity for continuous monitoring and reporting of tiny particles of less than 10 micron size (PM10) and less than 2.5 micron size (PM2.5), nitrogen oxide, sulphur dioxide, carbon monoxide, ozone, ammonia and air toxics including benzene, xylene and toluene. It also reports data on toxics like polycyclic aromatic hydrocarbon (PAH), benzene, lead and nickel as well. Delhi Pollution Control Committee (DPCC) under the aegis of the Department of Environment, Delhi Government. This data is available on the DPCC website. This is one of the most extensive data bases in the country.

Transparency in data reporting: Delhi has taken the lead to create a common platform to report data generated by multiple agencies including Central Pollution Control Board (CPCB) and Delhi Pollution Control Committee (DPCC) from six monitoring stations. This provides real time data, 24 hour average status, historical data for previous seven days and so on. This is presented along with meteorological data including wind speed and direction, ambient temperature, humidity and solar radiation.

Kolkata

Has taken the lead to generate special data on wide ranging parameters including ozone, hydrocarbon, benzene, benzo(a)pyrene, PAH, lead, nickel, arsenic etc.

Public transport

Under the JNNURM programme, the bus service has been seeded in nearly 64 cities. While some of the older systems in these cities are run by the state with the support of the private sector, in the newer initiatives the preferred model is the public-private partnership.

The mega and metro cities have also ventured into Metro rail. A few of these cities including Mumbai, Kolkata and Chennai also have the legacy of other mass transport modes like the suburban rail, or the tram and the ferry as in Kolkata. In this assessment, the focus is on bus transport which is the primary form of public transport in all cities.

The hallmark of a good bus service is its quality of service, travel time, reliability and frequency, level of comfort, costs and its environmental and social impacts. And the ultimate litmus test of a public transport is its ability to change the practice, increase ridership.

Delhi builds bus ridership, arrests the slide: Among the mega cities, Delhi has demonstrated that with all its reforms in place, it has been able to achieve the maximum increase in bus ridership since 2009; as much as 25 per cent, reversing the trend of falling bus riderships. This has been achieved against a backlog of enormous cost burden, losses and underperformance in

one of the oldest city bus services in the country, the Delhi Transport Corporation.

This is a result of decade-long reforms unleashed originally by a Supreme Court's directive to move all diesel-run buses to natural gas as a pollution control measure. Thereafter, the bus fleet went for a second renewal: modern and comfortable urban buses came in to improve the service quality in both public and private sector.

Delhi is poised to increase its bus numbers significantly; this is being done to meet the total of 10,000 as mandated by the court, as well as the new estimates of bus numbers that are emerging from the revision of the city's Master Plan. This means buses will need priority access and right of way. As of now, under the corporate model, if congestion on roads is the reason for non-completion of mandated trips per day (as verified by the monitoring system), the service provider is not penalised.

Bengaluru — innovative reforms increase ridership: The uniqueness of the Bengaluru bus service provided by the Bangalore Metropolitan Transport Corporation (BMTC) is its focus on treating the bus as a 'service' and improving the institutional and financial preparedness for providing this service. While most other bus corporations are still struggling with the issue of augmentation and renewal of their fleets with the help of government subsidies, the BMTC has from the beginning focused on segmented bus services to cater to different commuting requirements, and high quality facilities for bus users. It has also opted for innovative fiscal models to cushion some of its costs.

Bengaluru has increased its bus ridership by 64 per cent since 2004, and by 9 per cent since 2009. This is a significant jump when bus ridership is sliding in many cities. However, the success and increase in demand has also given rise to a challenge for this bus service: make the next level of transition — build to scale.

Mumbai suburban rail — largest mover of humanity: Mumbai's suburban rail has become the prime mover of humanity in the metropolis. The suburban rail system; one of the oldest mass transport systems in India carries 52 per cent of all motorised trips in Mumbai. It transports 7.4 million people a day. The closest that comes to this is the Kolkata suburban that carries 1.7 million, five times lower. This system has helped Mumbai dampen its car growth and usage compared to other cities. It remains the most notable transport success story in Indian cities.

Chennai — efficient system: The Chennai Metropolitan Transport Corporation's (CMTC) 3,637 buses carries more than 11,000 lakh passengers per annum. The CMTC buses operate on the basis of an average highest kilometer per day that can go up to 310 km a day. The CMTC is also in the process of revamping its bus system, especially under JNNURM. However, during 2012-13, its ridership dropped somewhat. Poor accessibility, more barricades to create signal-free roads and continuous flyovers are said to be impeding access to bus stops and affecting ridership.

Ahmedabad — leveraged bus transport to improve modal share: Ahmedabad had embarked on a clean air action plan when the Supreme Court had directed pollution control measures in 2003. The action planning process pushed for a makeover of the bus system based on natural gas.

This, catalysed by the JNNURM programme, helped augment the conventional bus system; simultaneously, Ahmedabad embarked on an extensive programme of bus rapid transit system.

As a result of all this, the modal share of public transport that was a mere 10 per cent in 2004-5 has now increased to 16 per cent. This turnaround is notable.

Action on walking and cycling

Policy action on walking and cycling is complex as it requires efforts to get well designed and safe infrastructure, policies on design guidelines (to get the principles right) and a legislative framework to protect the right of the road users. This composite action is missing in most cities. Only a few policy actions have shown up in a few cities that firmly uphold at least one right principle. In fact, often cycling and walking infrastructure is seen more as a facelift project for urban space rather than a usable asset for people.

Delhi is the first city in the country to have formally adopted street design guidelines with the requisite detail needed to make a street accessible and safe, with space for various road users. The street design incorporates vending zones, three-wheeler stops, road furniture and pedestrian-oriented lighting, and is well integrated with other environmental elements including tree shade, water permeability etc. Crafted by the UTTIPEC, this is expected to be the basis of approval of future road projects in Delhi. If implemented with rigor and stringency, this can transform access network in the city. This can also improve safety in a city that is notorious for the highest incidence of road accidents in the country.

The Chennai Municipal Corporation has established an important principle in its efforts to redesign streets. It has aligned its new initiative with the bus routes, recognising the principle of synergy between walkability and public transport access. Chennai has now started to reclaim space from the motorised lane. On several stretches as part of the new initiative, it has reduced the width of motorised roads to widen the footpaths. This is an important policy message.

Bhubaneswar stands out among all for an exemplary initiative to build continuous and extensive walking and cycling infrastructure and protecting it from encroachment. It has also made special efforts to include hawkers in its plan.

Popular cycling movements are also building up in cities. These are spontaneous movements of enthusiasts, but closely linked with access and health. While more organised effort has been noted for protecting and integrating cycle rickshaws, the most notable is the initiative of the small town Fazilka in **Punjab** that has revolutionised non-motorised transport by reinventing it to meet the modern mobility needs. This is now being scaled up for other Punjab cities especially after the Punjab and High Court order to introduce this in 22 Punjab cities. Chandigarh has been the latest in which the Chandigarh Administration has extended its patronage to ecocabs and also provided land for its stands.

Guwahati has also been innovative about reorganizing the cycle rickshaw as a mobility paradigm as well as integrating livelihood requirements and a well designed financing scheme through its rickshaw bank scheme.

A range of initiatives have been noted in hill towns that are land constrained and cannot afford vehicles completely choking the available space.

Action on autos and taxis

Intermediate public transport includes a plethora of small systems including auto rickshaws and taxi service. The ambit of intermediate public transport is being further broadened to include the organised ride sharing schemes as well. The intermediate public transport will require careful planning and deployment for last mile connectivity as well as feeders in bigger cities.

Delhi takes the lead by reversing the policy of capping the numbers of auto rickshaws by the city government in 1997, and then endorsed by the Supreme Court as a pollution control measure. This had created severe deficit in service in a growing and heavily populated city with enormous travel demand. Recognising this as a legitimate form of public transport, Delhi government with the consent of the Supreme Court has reversed the cap along with several reforms to make this service more organised. These vehicles have been put on GPS tracking system for enforcing proper metering and fare, safety, etc. The drivers are being issued smart cards for proper enforcement. Its pollution potential has been reduced by putting them on CNG and now a small niche market of electric three wheelers is also evolving.

Mumbai has also taken the lead to encourage more layered intermediate public transport system. It has also undertaken Fleet renewal on clean fuel; CNG. Several share-rides schemes are in operations. Efforts have been made to address drivers welfare and behaviour. There are several service improvement schemes in the pipeline including the requirement of displaying board about the status of availability of autos. The department has begun to act on complaint of commuters. It has one of the better organized radio taxis. Its seaplanes are also a unique opportunity in a coastal city.

Action on parking restraints

Cities need additional measures to correct the pricing of using and owning a car based on the environmental and social damages they cause to influence the commuter choice.

Indian cities that are already witnessing overwhelming car and two-wheelers traffic that is reducing people carrying capacity of the road need to take similar measures to reduce dependence on personal vehicles and cut pollution and improve liveability.

Parking policy is the most misunderstood and misused policy instrument when it comes to using it as a personal vehicle restraint measure. The National Urban Transport Policy has taken on board the demand management principles stating that parking should pay for the value of the land it occupies implying that use of public spaces for personal usage cannot enjoy subsidy. The Supreme Court directives to the Delhi government are also explicit that it should be designed to discourage car usage.

Kolkata — principle of restraint: Kolkata has evolved its parking policy that comes closest to meeting the principles of travel demand management measure or a car use restraint measure. This city has the highest parking fee in the country, Rs 10 per hour and is enforced across the

city in all paid parking areas. This is also the only metro city with clear residential parking requirements. Night parking in residential areas of Kolkata are managed by the Kolkata municipal corporation (KMC). After a car owner applies for night parking in front of his house and or on a specific stretch of road, KMC carries out an inspection. The thumb rule is that, after parking, there should be ample space for a fire service vehicle to ply. If the road is narrow, night parking is not allowed. The rates are Rs 400 per month and car owners are given a sticker. KMC does regular night patrol to check on illegal night parking and vehicles are towed away.

Delhi — protecting green spaces from parking: Delhi is developing a comprehensive parking policy as a restraint measure and also as part of transit oriented development guidelines. This will be included in the revised master plan of Delhi.

A noteworthy step that Delhi has taken is in barring parking structure in green areas and neighbourhood parks. In face of public protest in several neighbourhoods against construction of parking lot on neighbourhood parks in Delhi, EPCA intervened to direct the civil bodies that parks and playgrounds would not be permitted to be utilized for parking purpose as it would destroy breathing space and playground for children. The nine locations where such constructions had already been allowed were mandated to restore 90 per cent of the site to flat playground conditions with landscaping using shrubs and grasses. On the remaining 10 per cent land on the sides, trees will be planted. A small portion could be used as ramp

Gangtok and Aizawl — using parking strategy to control car numbers: The hill cities of Gangtok, capital city of Sikkim and Aizawl, capital of Mizoram, recognizing the unique constraint of land availability in hill areas have cracked the whip. In both the cities, official gazette notifications have been issued that require any prospective car buyer to first provide the proof that they have their garage space and will not crowd on the roads to qualify to buy a car. Gangtok has implemented this with due diligence and is know to have even taken action.

These are the ideas of change – however small and however insignificant they may seem today. They are the harbingers of a different tomorrow. The challenge now is to learn from these experiences and to upscale the practices so that once again, we can have the great leapfrog – move from cars to no cars. Move from pollution to no pollution.