

KANPUR CITY DIALOGUE

AIR QUALITY AND TRANSPORTATION CHALLENGE: AN AGENDA FOR ACTION

A BRIEFING NOTE

CENTRE FOR SCIENCE AND ENVIRONMENT

2009

- **Kanpur faces the same dilemma of the mega cities. Like Delhi and Mumbai it has begun to act to curb air pollution and even seen improvement. But like the other mega cities Kanpur's time to breathe easy is over. Air pollution is again rising. The city will have to act fast to recover the right to clean air again.**
- **Kanpur faces the second generation challenge. It will have to take stock and refocus. It will have to leap ahead to keep ahead of the problem. The increase in vehicles numbers threatens to undo the small incremental gains. It is time to initiate the second generation reforms in Kanpur.**
- **City can lose the gains of its the first generation reforms including the CNG programme if it delays transportation plan to promote public transport, walking and cycling. If dependence on personal vehicles increase pollution and congestion will increase. At stake could be people's health. Kanpur will see more smog and pollution; more wheeze and asthma**
- **Kanpur already has high usage of sustainable transport. But the city needs urgent policies to protect and build this strength.**
- **The second generation reforms will need tough action. Soft options have all been exhausted. Plan cities for people not vehicles. Design roads for public transport, cycling and walking. Not cars. This is the option for the city to cut killer pollution, crippling congestion, expensive oil guzzling and global warming impacts of vehicles.**

The *Kanpur City Dialogue on Air quality and Transportation Challenge: An Agenda for Action* has been jointly organised by the Uttar Pradesh Pollution Control Board and New Delhi based Centre for Science and Environment on December 17, 2009, in Kanpur. This public meeting has been organised to find the solutions to the scary air pollution challenge facing our cities today. This is part of the effort to engage with the policy makers and people of the city to strengthen the policy action on air pollution and, and urban mobility and also share lessons from other cities like Delhi to chart the future course of action.

Why Kanpur?

Kanpur is one of the rapidly growing cities in the country. There are already serious concerns about the likely adverse impact of motorization in these emerging cities. While the mega metro cities have an acknowledged transport crisis that has attracted major planning efforts, and extensive large-scale investment, the medium cities largely remain neglected. They will also reach a crisis point unless immediate and effective policies are implemented to follow sustainable growth path at the early stages of motorization.

National governments may define the framework for national air quality management and national urban transport policy but cities are the action centres where real change is possible. Cities can respond more effectively to local problems and meet local targets. City governments are closer to local concerns and people and can take quick and appropriate decisions needed to reinvent mobility and clean up the air. Air quality and mobility management rests with cities.

There is no 'one best way'. Solutions will have to be customized for each city according to its imperatives and uniqueness.

Strong public opinion, judicial and executive actions have accelerated action in Kanpur. The common minimum programme is evolving with milestones and timeline in Kanpur. City action plan for clean air developed for the city has created an opportunity for change. This provides the framework for controlling different pollution sources – transport, industry, power plants and helps to achieve the balance between the composite action and priority action.

What are the current air quality challenges in Kanpur?

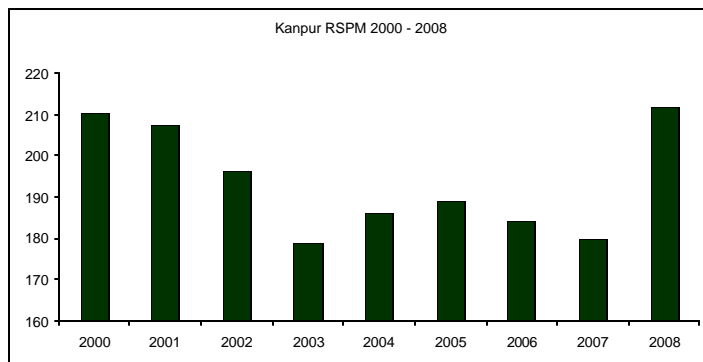
Kanpur has already begun action to reduce air pollution and seen some improvement. But Kanpur is in danger of losing the gains of its first generation action as pollution levels are once again creeping up. Latest analysis of recent air quality data carried out by the Centre for Science and Environment (CSE) finds that pollution levels are on the upswing again after a few years of control.

- When the first phase of action was initiated in the city, Kanpur had the dubious distinction being the most polluted city. Severe particulate pollution had begun to choke Kanpur. The air quality data of the Central Pollution Control Board (CPCB) revealed that the levels in the city were 45 times above the standard. Their levels also exceeded standards almost on a daily basis. Even nitrogen dioxide levels though lower than standards have shown bullish trends.
- The small breathing space that the city had gained is on the verge of getting lost. The annual average levels of respirable suspended particulate matter (RSPM, or PM10) in the city stood at 211 microgram per cubic metre in 2000. They dropped to 179 in 2001.

microgram per cubic metre during 2003-05. The upward swing is now noticeable -- the annual average levels have jumped back to 212 microgram per cubic metre in 2008 -- 3.5 higher than the standard. The levels can even be higher this winter (see graph 1).

- Levels of nitrogen oxides (NO_x) have been increasing in the city though below standards, which is a clear sign of pollution from vehicles.

Graph 1: Trend in respirable particulate matter in Kanpur (2000-2008)
After a short respite the levels are rising again



Source: Based on air quality data from Central Pollution Control Board

- The recent tightening of the air quality standards by the Union Ministry of Environment and Forests has further changed the air quality profile of the locations in Kanpur. While particulate pollution in these locations like Sharda Nagar, Deputy ka Paro, Kidwai Nagar, and Fazal Ganj continue to remain critically polluted, the nitrogen dioxide levels in all these locations have moved from low to moderate levels.
- About 60 per cent of the geographical area of the city has pollution problem with a highly polluted city core. This exposes a large number of people to very high pollution levels.

City needs to take tough measures to control growing air pollution and fast. Otherwise, the city, will find itself in the toxic haze of the early days.

Even Delhi has faced similar predicament. It stabilised pollution with the help of first generation reforms. But pollution levels are rising again.

Public health at risk in Kanpur

- Sprinkling of study available in Kanpur from GSVM Medical college and CPCB etc show lower lung function for people living in Vikas Nagar and Juhilal Colony than those living in cleaner environment. UPENVIS has shown that in entire Uttar Pradesh 0.4 million disability adjusted life years are lost due to air pollution and this costs the state about Rs 2.6 billion. Studies in the US show that an increase of only 10 microgramme/cu m of particulate matter of less than 2.5 micron (PM2.5) is associated with significant increases in health risks. High exposure to PM2.5 is known to lead to increased hospitalisation for asthma, lung diseases, chronic bronchitis and heart damage. Long-term exposure can cause lung cancer. Rising level of nitrogen oxides can also have serious implications for respiratory diseases.
- But is also clear that if we act on time and improve the air quality we can save lives and illnesses. A study by Usha Gupta Institute of Economic Growth and Bhimrao Ambedkar College has estimated that collectively, the annual monetary benefits to the entire population of Kanpur can be as much as Rs 213 million – which means that the city can save this much – if the city is able to meet the air quality standards.

Where is the pollution coming from?

Kanpur is a city of mixed activities. Most of the air pollution is coming from rapidly growing number of vehicles, high levels of industrial activities and growing use of diesel generator sets. The recent assessments carried out by Central Pollution Control Board and Kanpur IIT show that as much as 22 per cent of the killer particles are from vehicles and 33 percent are from industry whereas 47 per cent of nitrogen oxides is from vehicles and 43 percent is from industry.

Vehicles pose a special challenge

We need stringent action in all the sectors to attain clean air. But vehicles are a special problem. Why?

Vehicle fumes cause maximum health exposure:

Vehicles are of very special concern because vehicle emissions take place within the breathing zone of the people. This increases our daily exposure to deadly dose of toxins. Vehicles are responsible for the maximum amount of human exposure to air pollution. Studies carried out by the World Bank in other cities have shown that nearly half of the total exposure to particulates that make people ill could be due the vehicles. That is why vehicles require more stringent measures.

Personal vehicles enhance mobility crisis in Kanpur

Mobility crisis begins to build up in a city when a large share of daily trips is made by personal vehicles that occupy more road space but carry fewer people, pollute more, and edge out walkers, bicycles, buses and intermediate public transport. There are early signs of this crisis in Kanpur.

Cities do not have space left to increase their road space for more personal vehicles – two-wheelers and cars. Existing space has been saturated. Congested roads have slowed down the journey speed led to fuel wastage and pollution.

- Compared to the mega cities of Delhi and Mumbai, the rate of motorisation is still a lot lower in Kanpur. But given the scale and size of Kanpur, and its population and density, the current numbers and the rising trend have already created enormous pressure on the city. Kanpur with 2.5 million people has 643245 motorised vehicles. Every year Kanpur is registering 40,000 new vehicles. According to the Kanpur transport department at least 100 two-wheeler and cars and 10 commercial vehicles are registered daily. To this is added daily influx of vehicles from outside the city especially commercial traffic. Even though the vehicle numbers are a lot less than Delhi, smaller and densely built Kanpur is getting increasingly congested.
- Dependence on personal vehicles is rising steadily in the city. Two wheelers are 83 percent of the fleet and cars are 13 per cent. At least two-wheelers are more space efficient and use less fuel. But already cars are increasing at a higher rate than two-wheelers. The annual growth rate of growth for two-wheelers is falling and is currently 7 per cent lower than the growth rate for cars which is 10 per cent. Each new batch of vehicles though a little cleaner barely makes an impact on air quality as its rising numbers swamp the effect. This will change the pollution and congestion profile of the city in the coming years.
- The ugly manifestation of this growing congestion is slowing down of peak hour traffic. Against the governed maximum speed of 30 to 40 km/hour the average speed in Kanpur has plummeted to 17 to 20 km/hour – even slower at some stretches. According to the study carried out by the Wilbur Smith for the Union Ministry of Urban Development in 2008 the congestion index of Kanpur is poorer than a bigger city like Ahmedabad.
- This study reports that in more than 26 per cent of the road length the traffic volume has exceeded the designed capacity of the roads. The City Development Plan of Kanpur shows that the traffic volume on key roads (Meston Roads, Canal Road, Halsey Road, Latouchey road, Birhana road, Canal road, Nayaganj, and Kidwai Nagar road near Ghantaghar) have exceeded the designed capacity of the road. Roads have to bear more traffic than they have been designed for. Roads are also encroached and surface quality is poor. This further slows down journey speed.
- Little has been done to plan for public transport in the city and connectivity. Clearly a massive initiative to increase other sustainable modes of transport is needed along with steps to restrain the growth of personal vehicles at this early stage of motorisation.

Vehicles threaten energy security

- Vehicles not only pollute air but they also threaten energy security. International Energy Agency has predicted that the future increase in energy demand in the transport sector of India will be largely driven by the increase in personal cars. Asian Development Bank has predicted that transport energy use will increase six times by 2020. This is ominous in a country where 72 per cent of the crude oil is imported. Energy imprint of motorization will have to be reduced in each city.
- Even in Kanpur the cars and two wheelers together already use up about 80 per cent of the total energy consumption of 0.1 Million tons of oil equivalent per year in the transport

sector. If the dependence on personal vehicles continues to increase the oil consumption will increase three times by 2030 when the four and two wheelers will consume 95 per cent of the energy in the transport sector of the city. This has been borne out by the SIM Air study of 2009.

Vehicles can accelerate warming

- If energy use increases the emissions of heat trapping carbon dioxide that cause global warming will also increase. Already, growing use of personal vehicles is increasing CO2 emissions from the transport sector of the city. The SIM Air study shows that amongst all vehicle segments the CO2 emissions from the personal vehicles (cars and two-wheelers) segment are the highest – as much as 84 per cent.

First generation reforms in Kanpur have exhausted soft options

In the past few years, Kanpur has taken steps to reduce pollution. These are the first generation reforms that have helped to arrest the runaway pollution in the city. But the levels are still unacceptably high.

- **Action on vehicles:**
- Kanpur has tightened the emissions norms of vehicles; strengthened pollution under control system with new equipment and norms for in-use vehicles; introduced CNG programme targeting autos, tempos and buses (There are 3,876 CNG vehicles); Age of the vehicles has been fixed. Kanpur has phased out -- 105 buses (>9 year old): 907 tempos (>7 year old), 565 autos (>10 year old), and Maxi cab (>15 year old). Only three wheelers with catalytic converter/ scrubbers are registered and allowed within the Municipal limits. Battery operated three wheelers are being encouraged. New buses have been introduced; Entry time of transit commercial vehicles on GT road is restricted and so on. *(status August 2009)*
- **Action on industry**
- In Kanpur 12 industries have been closed and three issued notices on non-compliance to norms out of 60 air polluting industries; Panki thermal power station does not meet the norm but bag filters/ ESP installed. Fly ash used in cement industry and by NHAI; Open burning of biomass and solid waste has been banned in municipal area and so on.

But in spite of all these actions, pollution levels are on the increase. The second generation reforms are now needed to combat the new challenges – growing pollution and mobility crisis.

People of Kanpur want change: How do people of Kanpur perceive the problem?

Centre for Science and Environment has carried out a rapid stakeholders' perception survey. This is part of its ongoing assessment to understand the perception of the air pollution and mobility problems in the city. The respondents are from different target groups – experts, officials, commuters, doctors, teachers, business, civil society among others. They have reflected on the core issues that must be looked into for making the next generation action agenda. The key highlights are as follows:

- The majority – a whopping 80 per cent have said air pollution is worsening and half of them have said the air is highly polluted
- A thumping majority – 80% have said incidence of respiratory diseases, asthma, eye irritation are on the rise.
- More than 90% have identified congestion as the biggest problem
- Nearly 90% have supported the CNG programme as one of the most effective step so far in the transport sector to clean up the air
- Nearly 65% have identified the cleaner domestic fuels as the next clean step
- About 60% have indicated improvement in emissions standards as contributing to cleaner air
- Less than half think new roads and flyovers can help to clean up the air
- Majority have said that cycles and cycle rickshaws are important and should be given segregated space
- Nearly 35% have rated city public transport as average and 30% as poor
- About 40% feel that intermediate transport is good Availability of intermediate public transport service – autos and tempos is better than the buses
- There is nearly unanimous support for improved public transport.
- Nearly 80-90% have said that they will prefer to take public transport if it improves
- Nearly 90% have supported dedicated lanes for buses
- The majority find the walking infrastructure poorly maintained and as a result of this they do not enjoy walking. This needs immediate attention as pedestrian traffic is the strength of the city
- Majority are skeptical about higher taxes on personal vehicles.
- Half of the respondents have supported congestion tax
- At least 40% have said that fuel adulteration is still a problem

For future action it is important to understand Kanpur's strength

Even though personal vehicles -- cars and two-wheelers -- are the largest part of the vehicle fleet and are crowding the city, yet their combined share in meeting the daily travel needs in the city is less than other modes of travel. Two-wheelers carry 21% of the daily trips and cars just 16%. But they occupy the maximum road space.

It is important to note that more than 60 per cent of the travel needs are met by the intermediate public transport system, autos, tempos, cycle rickshaws, cycles, buses and walking. This is Kanpur's strength. Majority of the city dwellers still use more sustainable forms of transport in Kanpur. This reflects the strength that Indian cities have. The usage of more sustainable model of public transport, intermediate transport and cycling and walking is still high. Urban and transportation plans should be made for these urban majority and not the car owning minority.

Learn from Delhi's experience. Delhi has not been able to solve its problem of pollution and congestion by building more roads and flyovers for cars. Delhi is most privileged to have more than 21 per cent of its geographical area under road space. Delhi has built the maximum roads and flyovers. Yet its roads are totally gridlocked. Peak hour traffic has even slumped to below 15 km/hour. Cars and two-wheelers in Delhi occupy 90 per cent of the road space but meet less than 20 per cent of the travel demand. More roads are not the answer.

Evidence in Delhi is clear. Because of its pro-car policies Delhi could not protect its initial strength -- 60 per cent ridership of its buses during the early part of this decade. By 2008 the

bus ridership share has fallen to 43 per cent and it will reduce further if urgent public transport policies and infrastructure for bicycles and walk are not implemented. Delhi is also now focusing on building public transport and policies for pedestrians and cyclists.

Kanpur must not repeat the mistakes that Delhi has made of following pro car policies. Kanpur still has the chance to plan its future growth differently and avoid the path of pollution, congestion and energy guzzling. More road space is not the answer. Cities need to redesign their existing space and travel pattern to provide the majority of the people affordable and efficient mode of transport that can be an alternative to personal vehicles. Kanpur must build on its strength.

Agenda for action. The future in our hands

If Kanpur and all other cities do not want to wheeze, choke and sneeze then it has to act now. Its work with CNG shows that it can make a difference. It is time to set new terms of action.

The rapidly rising vehicular fleet new vehicles must emit as little as possible and therefore, technological improvements must take place as fast as possible. But technical measures alone cannot achieve the desired target for emissions reduction if the increasing number of vehicles is not checked. Sheer volume of vehicles threatens to destroy the gains of pollution control.

City action plan need to set a target of meeting the clean air standards and improving the combined modal share of public transport, cycling and walking to at least 80 per cent to begin with. This is possible as their current modal share is already more than half. Protect this.

1. Strengthen the CNG initiative and improve technology roadmap: Efforts to clean up the vehicle technology must be accelerated. The CNG programme has been the first opportunity to leapfrog beyond the polluting diesel technologies and two-stroke engines. The environment benefit of this programme has been further enhanced because this is linked with a public transport augmentation plan. CNG buses and CNG autos are an important part of this programme. This has the potential to reduce highly toxic particulate pollution. A diesel bus emits 46 times higher particulates than a CNG bus. CNG programme will help to prevent highly toxic diesel emissions. Diesel vehicles are known to emit higher particles and NOx than their petrol counterparts. According to WHO and other international regulatory and scientific agencies, diesel particulates are carcinogens.

To further strengthen the CNG programme remove the current glitches in refueling systems and increase CNG supply to meet the increasing demand, adopt a CNG pricing policy that will maintain an effective differential between CNG and diesel prices. City will have to develop a robust periodic and mandatory safety and emissions inspection for the on-road CNG vehicles, as Delhi has done.

Speed up technology roadmap: Simultaneously, Kanpur has to demand from the central government early timeline for introduction of more advanced and cleaner vehicle technologies and fuels and speed up implementation of Euro IV emissions standards and the subsequent tighter standards. Also devise strategies for in-use vehicles – their regular effective emissions inspection and renewal of the old fleet.

2. Reinvent mobility

The city needs to prevent increased dependence on personal vehicles and provide affordable, comfortable and attractive alternatives for mobility to the majority of the city dwellers. Redistribute road space according to the users not vehicles,

Need city transportation and mobility plan: Both the state government and the Central government are funding the city infrastructure. It is important to influence the new investment with a proper mobility plan for the city. Cities are already required to prepare a comprehensive mobility plan that will include the key strategies for sustainable mobility. This is expected to be the basis of future funding from the Central and state governments.

Already the Central government funds are available under the reform based Jawaharlal Nehru National Urban Renewal Mission (JNNURM) for urban transportation. Kanpur has recently received a reform based grant to purchase buses for the city under the JNNURM programme. This one time JNNURM bus scheme is tied to conditional reforms in the transport sector. To access this fund the city government will have to initiate institutional reforms for public transport management and implementation, create dedicated funds from revenues from a variety of heads including higher taxes on personal vehicles and diesel cars, implement parking policy as a car restraint measure, use advertisement policy for revenue, reform bus sector for more efficient delivery, make land-use changes among others. Kanpur like other Indian cities is now expected to come up with City Mobility Plan that will identify clearly this action agenda for implementation.

If the infrastructure investments and schemes are leveraged based on the city mobility plan the transport sector of the city can be transformed substantially and made sustainable. This can influence the way people travel. Kanpur can gain substantially if the priority areas for sustainable mobility can be identified at the early stages of its mobility planning.

Build integrated public transport:

Expand bus fleet according to city's need: The city is in the process of building its bus numbers. Around 300 buses are proposed for the city. As of October 2009, a total of 14 buses have started plying on the two main routes (Chakeri-IIT and Phool Bagh-IIT routes). In the next lot 150 mini buses, 100 ordinary buses, 30 semi-low floor buses are expected to hit the roads. Already as the Ministry of Urban Development's report shows that in 2007 there were 176 government and private buses in the city. Thus, there are 6 buses for 100,000 people. This is in contrast to 13 in Ahmedabad, 39 in Bangalore, and 43 in Delhi. Carry out proper surveys and assessments to decide the critical bus numbers that the city needs.

Reorganise bus sector for efficient delivery: Only buying buses will not help. It will require route planning, fare policy, and efficient management model. Wherever possible consider giving traffic priority to the buses to improve their speed. Kanpur may need new management framework for both state owned and privately owned buses so that Transport Corporations do not suffer from mismanagement and inefficiencies. Private bus service may require a proper business model and also perhaps cost sharing arrangement. This may cost enormously. This is already evident in Delhi that is in the process of revitalizing the bus system. The gap financing that the government is expected to bear can become unaffordable if there are no plans to mobilize revenue. While financial performance of the bus transit system will have to improve by lowering cost of capital, consumables, fuels and staff

cost, cities will also have to look at the additional revenue to support the cost of transport.

Tax measure for buses: Public transport will have to be incentivised for public good and environmental benefit. This will require reduction in tax burden to reduce both capital and operational costs of buses. But unfortunately, in most of our cities buses have to shoulder higher tax burden than cars. A cursory review of existing transportation taxes in most cities show severe distortions. While private cars pay a minuscule amount as road tax, buses pay several times more. But cars carry disproportionately lower number of daily commuting trips in comparison to higher road space they occupy, and cause more pollution per passenger. While tax burden on buses should be lowered that on personal cars should be increased.

Kanpur however, has taken more progressive steps than even Delhi while rationalizing the taxes on transport in October 2009. The most important development is that under the new tax regime, city buses have been completely exempted from the additional taxes. Evidently, out of all the taxes that these buses had to pay earlier, the additional taxes were 70% of total state taxes. Also the new city buses will pay lesser tax compared to older buses. This might help to weed out older and unfit vehicles.

In the light duty vehicle segment UP Taxes are now linked with the weight of the vehicle. Heavier the vehicle higher the taxes. The vehicles with solar and battery power will be exempted from these taxes. UP also charges annual tax on old vehicles which are higher for heavier passenger cars and SUVs.

The tax distortions are most skewed in Delhi where buses are made to pay more taxes than cars. If amortized over 15 years a car costing upto Rs. 4,00,000 in Delhi, and carrying only one or two persons on an average, pays an annual tax of merely Rs. 533 per annum. But a bus that carries at least hundreds of people a day and emits a lot less per passenger is made to pay nearly Rs. 13675 per annum. This needs to change.

Build funds for public transport: At present there is barely any official scheme in Indian cities to stimulate investment in public transport. National Urban Transport Policy has proposed that the Government should encourage the levy of dedicated tax to be credited to an urban transport fund to exclusively meet urban transport needs. Cities need to look at the variety of measures to generate funds. Higher taxes on personal cars that can also help to lower their usage and hence the congestion, parking revenue, advertisement revenue, road pricing strategies etc. There are examples from other cities. Delhi has imposed an environment cess on diesel to create Air Ambience Fund to fund pollution control efforts in the city. Bangalore and Chennai have introduced higher taxes on older vehicles. Surat has already created a dedicated urban transport fund partly through budgetary allocation and the rest will come from parking revenue, property tax, etc.

Do not neglect intermediate public transport (autos and cycle rickshaws). Strengthen them: It is more important to understand how people travel in Kanpur. Formal bus system actually carries just about 9 per cent of the daily trips. But a lot more people – the majority – use the informal intermediate public transport system of autos, tempos and cycle rickshaws. The combined modal share of buses, autos, tempos, and cycle rickshaws, together cater to a substantially higher travel demand

in the city. There are 980 auto rickshaws and tempos plying in the city. And this needs strong policy recognition and support. Kanpur should focus on developing both its formal and informal public transport system in an integrated way and not one at the cost of the other.

But the city is already beginning to see the conflict between formal and informal public transport systems. The advent of new buses is being seen as eroding the space of the intermediate public transport systems. Also buses are being blamed for congestion and taken to the city's periphery. City needs a clear for buses to serve the key arterial roads to effectively link the core city with the new development. Also the intermediate public transport of autos should be reorganized as effective feeder for the bus transport and also to link all neighbourhoods efficiently. Routes of the buses will have to be rationalized.

It is important to recognize that the majority of the trips in Kanpur are short trips. The 'service accessibility index', developed by the Union Ministry of Urban Development shows high percentage of work trips in Kanpur are accessible within 15 minutes. A recent study by the Union Ministry of Urban Development shows that most trips fall in 0 to 2 km range. This makes walking, cycling, cycle rickshaws and autos very convenient and appropriate. The City Development Plan states, "These are backbone of public transport." This needs to be protected and improved. It will be wrong to treat these vehicles as traffic nuisance and making way for more cars.

Autos and cycle rickshaws are the part of the affordable public transport system for the majority of the city dwellers. Their efficient use can reduce dependence on personal vehicles and the costs associated with operations of personal vehicles. The solution does not lie in putting restrictions on registrations and permits on new autos and tempos and cycle rickshaws. Integrate them with the proposed 18 bus routes being developed for the JNNURM bus routes so that they can work as effective feeders. Kanpur therefore needs a public transport plan that designs deployment of buses in terms of rationalized routes, affordable fares, quick frequency, efficient organization of bus transport. Simultaneously, reorganise and integrate autos and cycle rickshaws. Improve their technology levels so that they are also clean and efficient and comfortable. They also need deployment strategies. Do not remove them to create more space for cars. Cars will create more congestion and pollution for a small number of people they carry.

Build cities for people. Protect high pedestrian traffic:

Even today nearly 30 per cent of daily travel trips in Kanpur, one third in Delhi, and more than half of Mumbai are walk trips. In most Indian cities people who commute by walking outnumber those who use their vehicles. This is an enormous strength in our cities. Our cities were built to be walkable. High density, mixed land use, and narrow streets have made walking for work and recreation comfortable, feasible and popular in traditional Indian cities. More than 40 to 50 per cent of the daily trips in many of our cities have distances less than 5 kilometers, in Kanpur less than 2 kms. This has enormous potential to convert to non-motorised and especially walking trips. But wrong policies are leading to urban sprawl, increasing journey distances and making cities less walkable.

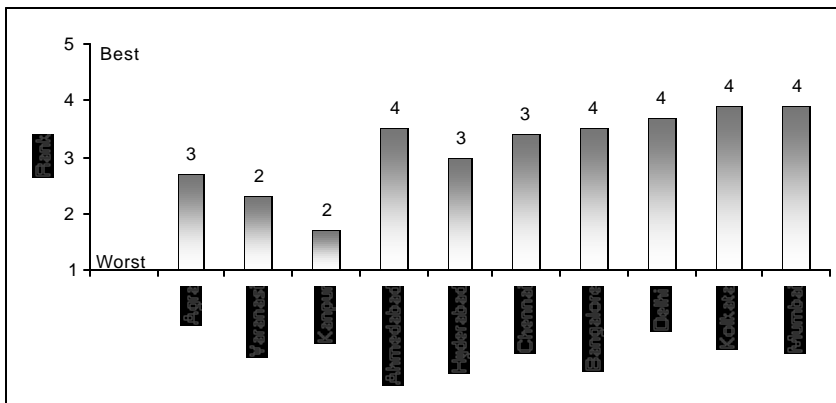
Even increase in public transport ridership will increase walking as all public transport trips begin and end with walk trips. Even 50 per cent increase in kilometer traveled by public transport would lead to massive increases in walking. Roads will have to be planned with more well designed sidewalks and safe cross walks. Therefore, the city has to plan the pedestrian infrastructure to cater to the present and future demand for walking in the city. Urban poor are too poor to even afford a bus ride for daily commuting. Often the only option for them is to walk.

The renewed interest in walking globally is also a fall out of the urgency to reduce energy, pollution and climate impacts and improve livability of cities. In the western world even health dynamics is playing an important role in reinforcing walking, as a measure to fight obesity.

All new roads must have well and appropriately designed pedestrian ways that makes walking safe, comfortable and convenient. The pedestrian facilities need to provide the shortest direct route to destinations. Remember, bad engineering interventions once made cannot be changed easily but it will permanently decide the design of the network and influence travel choices of people. It is imperative to ensure that road design does not increase dependence on and usage of personal vehicles. That is possible only if policy focus shifts to public transport, walking and cycling.

Graph 2: Ranking of pedestrian facilities

Kanpur has a poor ranking of pedestrian facilities



Note: Rank 1- lowest and 5- best

Source: Wilbur Smith/Ministry of Urban Development, 2008

Pedestrian facilities in Kanpur are under tremendous pressure. According to the City Development Plan, majority of the roads are encroached. This worsens traffic jam, congestion and slows down traffic. Other than a few roads, all other roads lack footpath and zebra crossings. Recently the city administration has begun anti encroachment drive to free up the pedestrian space. However, it is important to adopt a pedestrian policy that will integrate the following elements:

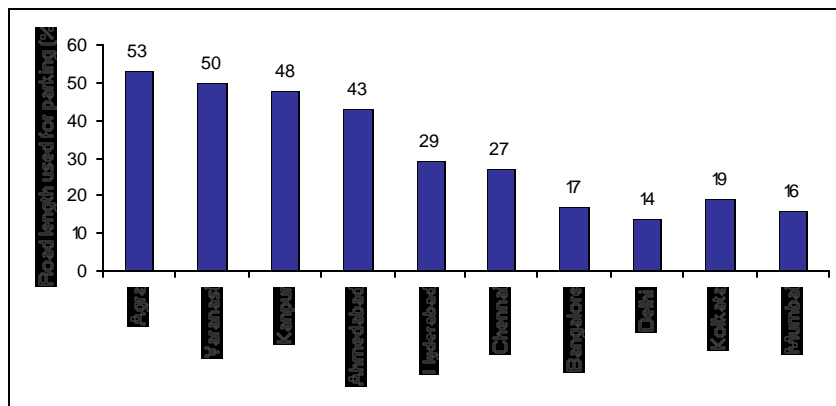
- **Government should mandate pedestrian plans and make it conditional to infrastructure funding:**

- **Immediately reform engineering and environmental guidelines for walkways and make their implementation mandatory:** Ensure these guidelines are incorporated by all road building agencies.
- **Harmonise existing laws for effective implementation:** While relevant laws will have to be harmonised it will have to be combined with more direct legal protection of pedestrian space and rights.
- **Need a comprehensive Road users act** for targeted pedestrianisation; segregation of space by users; system of penalty to prevent encroachment in pedestrian space; prevent usurpation of pedestrian space for motorised traffic without proper justification.
- **Urban local bodies must implement walkability audits of pedestrian ways**
- **Public transport plans must include pedestrian plan for multimodal integration.**
- **Need zero tolerance policy for accidents**

City needs parking policy to reduce congestion

More cars mean more demand for parking spaces. The insatiable demand for parking hurtles our cities towards congestion nightmare, it also devours scarce urban land, aggravates pollution and leads to social tension. Parking entails enormous cost. Normally, city governments focus only on creating more and more parking space. But it is also important to use parking policy to restrain usage of personal vehicles and encourage public transport.

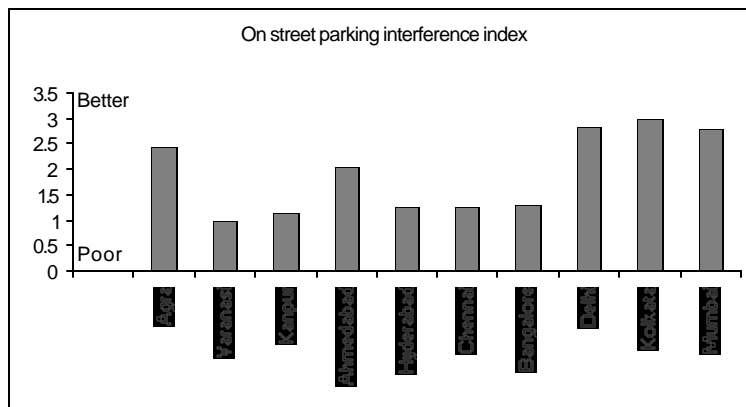
An assessment of the Union Ministry of Urban Development shows that the problem of on-street parking is very high in smaller cities compared to big cities. Close to 50 per cent of road length in small cities such as Agra, Varanasi and Kanpur is used for parking whereas the same in bigger cities such as Delhi, Kolkata and Mumbai it is 14 per cent, 19 per cent and 16 per cent respectively.



Graph 3: On-street parking on major road corridors

Source: MOUD*

Graph: On street parking interference index



Source: MOUD

According to the City Development Plan CDP, parking supply and demand presents a very grim picture in Kanpur. Majority of commercial establishments do not have parking space within their premises. On street and mostly free parking is leading to haphazard parking and slow traffic movement.

The City Development Report has also found that in the inner central business districts in Kanpur City parking demand is met primarily by on street parking. The plan remarks that unless some measures to create more off street parking spaces are made, the traffic conditions will not improve.

Parking is now being allowed on sidewalks but this is curtailing the space for pedestrians. Recently Kanpur Nagar Nigam has begun to mark the areas for parking along roadside. This is in direct conflict with the walking space, as it was observed in Mall Road. People are forced to walk on the road.

The city government is now focusing on creating more parking spaces by planning multi-level parking lots and parking under the parks etc. For the para-transit modes i.e. tempos and autos the Kanpur Nagar Nigam has constructed specific lots where they can be parked and can be used as small depots from where they can originate or get terminated. City government is now planning to build extremely expensive multistoried car parks in prime areas such as the car parking project at Phool Bagh.

Only increasing parking spaces will not help to solve the problem. The parking policy must integrate the following principles to reduce demand for parking and also use parking to promote other sustainable modes of travel:

- **Park and ride system for longer distance travel:** Use multilevel parking as much as possible for integrating public transport modes (buses, trains etc) and pedestrianisation of city centres. People can park their personal vehicles in these parking structures and use public transport or walk.
- **Eliminate free parking in targeted areas.** This will encourage people to use public transport and intermediate public transport.
- **Introduce variable parking rates** according to peak hour, duration of stay etc.

- **The parking charges in multilevel parking should be linked to the actual cost of providing the parking.** Car parking should not be subsidized. Estimates from Delhi show that the cost of providing parking in multi level parking is nearly Rs 4 lakh to 6 lakh per car space. This translates into a parking fee of at least Rs 30-39 per hour. But people have got used to paying paltry for using high cost services. The existing policy perpetrates hidden subsidy to rich car owners as the cost of using up scarce and valuable urban space for parking are not recovered through proper pricing and taxes. Worldwide experience shows that appropriately priced parking can influence demand for parking and commuter choice for alternatives.
- **Free parking should be allowed only to non-motorised transport** – cycles and cycle rickshaws. Parking rates should be higher for bigger cars and SUVs.
- **Control roadside parking. Protect pavements from parked cars.**
- The world over it is recognised that demand for parking is infinite and any amount of supply cannot meet this demand if additional measures are not implemented to control car growth and usage and also use parking lever itself to control the demand.

Integrate land-use plan with transportation plan.

Indian cities already have dense mixed land use planning. This is an opportunity to keep our travel distances short and more amenable to using public transport, cycling, walking etc. Policies should continue to encourage mixed land-use growth and prevent sprawls that increase car dependence.

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