

# Life in Times of The Traffic Jam: Why Smart Cities are De-Motorizing

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## ABSTRACT

The spectacle repeats itself in thousands of cities across the globe every morning: a slow-moving avalanche of tin and steel boxes of many shapes and forms is moving towards the centre of the agglomeration, trapping millions of people in a noisy, polluted environment that is endangering them and the flora and fauna around them (or rather: of whatever may be left of it.) All too often, it's a 24-hour phenomenon, and does not even confine itself to a clear periphery-to-centre pattern: streets remain littered with motor vehicles at all hours of the day. We've all heard the corresponding statistics: In Bangkok, economic losses due to traffic jams amount to 3.5 percent of the national GDP every day. Breathing the air in Mexico City is equivalent to smoking two packs of cigarettes a day. The World Bank confirms that half a million people die every year in road accidents, most of them vulnerable road users (1). In short: traffic is costly, traffic is deadly.

Traffic congestion is not a new phenomenon, of course. It was a problem in ancient China, antique Rome, medieval London and Renaissance Florence as much as it is in present-day Cairo, Sao Paulo, Teheran, Manila, Mexico City or Los Angeles. What is new, however, is that our irrational way of getting ourselves from our sleeping to our working habitats is not only detrimental to our own mental and physical well-being, but is also permanently affecting the global environment. One particular problem of modern day mobility, apart from the different order of magnitude and speed at which we are transporting goods and people, is the exhaust pipe. Transport is responsible for about 50% of global oil consumption, and for up to 90% of carbon monoxide, nitrogen oxide and hydrocarbon levels in heavily trafficked urban areas. There are only two ways to halt the depletion of non-renewable natural energy resources and to cut down emissions: driving less and/or producing more energy efficient vehicles. Technical problems as well as cost considerations make the latter alternative a limited option, forcing all of us to seriously re-consider our transport energy consump-



Figure 1  
Agra – India

Figure 2  
Jakarta, Indonesia

tion patterns. Agenda 21 contains several useful transport policy suggestions, but no special chapter on transport. This seems to be one of the more urgent shortcomings of the Agenda document that could be remedied at its upcoming review. Transport will be a major topic for the CSD Dialogue sessions in 2001.

But above and beyond producing global policy documents and solemn declarations, what exactly are we to do? 'Get rid of cars and trucks and stop building roads,' scream the radical environmentalists. 'Develop

Figure 3  
Kumasi Ghana, road network



lower-emission vehicles and expand road capacity!' yells the industry lobby. In fact, what one might call the emerging new 'sustainable mobility consensus' takes elements from both sides. Even industry experts increasingly admit that efficient and attractive alternatives to individual motorized transport must be the priority issue. End-of pipe solutions do not present an easy way out, not only because they are usually too costly for poorer countries to implement. Even zero emission cars still require lots of energy to produce and operate. And even if the whole world suddenly switched to non-polluting, small vehicles: roads and parking spaces would continue to take up valuable urban space and still sever natural habitats and urban communities. And if the current Sports Utility Vehicle (SUV) craze in the US and Europe is any indication, then upwardly mobile, higher income folks will always opt for the bigger, more polluting vehicles as long as their real function is that of a social status symbol.

Efforts to constrain citizens' automobilistic habits are always highly sensitive, and often tantamount to political suicide. The authoritarian city-state of Singapore is perhaps the most notable exception, boasting high luxury taxes on cars, strict area licensing and a sophisticated electronic road-pricing scheme. Yet even in places where recourse to such drastic measures is not a political option, there are lots of things cities can do. Well-designed strategies combining disincentives to car use with a variety of non-motorized and mass transit solutions and long-term land-use planning will benefit any city, thus creating a healthier, cleaner and more efficient environment for all its inhabitants.

Not all cities are the same, of course, and there are no uniform answers. Also, Lagos does not have the same economic and technical resources at its disposal as Stockholm. But regardless of how rich, how poor, how hot, how rainy, how socially diverse or segregated a city is, putting thought and money into better transit and non-motorized infrastructures will always help ease the

onslaught of motorization. What is needed is not so much a technical as a mental revolution in the minds of planners, politicians and prominent thinkers, both in the North and the South. Luckily for the rapidly developing cities in the south, this also means that solutions do not have to be as costly and as dependent on high-tech Western imports as they are often made out to be.

So our pessimistic snapshot of the global morning rush hour does not have to be a chronicle of a death foretold. What seems like the beginning of an inevitable story with a tragic outcome could just as well have a happier ending. But it is really more a question of imagination, creativity and inventiveness than of high-tech gadgets and fancy engineering. All of us, and especially transport experts, urban planners, developers, politicians and civil servants need to abandon the mistaken notion that modernization is equal to motorization, and that moving up in the world is equal to moving around in a bigger vehicle. Upon closer inspection, these notions indeed reveal themselves as urban myths. It is true that globally, motorization growth rates tend to be closely associated with economic growth. It is also true that transport infrastructures, including roads, are a fundamental requirement for economic development, providing access to jobs, markets, goods, services and natural resources. But especially in dense urban environments, cars have long become handicap rather than a solution. That's why young professionals in Amsterdam or Copenhagen use bicycles more often than cars. That's why Wall Street stockbrokers take the subway or the express bus to work. And remember that Tony Blair works mostly at home at No.10 Downing Street, avoiding London's rush hour altogether. A quick glance at some of the most successful cities around the globe shows that most of them at some point radically changed their attitudes towards transportation and mobility. In the 21st century, smart cities exchange their policies of accommodating ever growing numbers of cars for innovative strategies that curb car use, strengthen public transport, and encourage people to walk or bike.

In **Western Europe**, Dutch cities like Amsterdam, Utrecht or Groningen are most frequently cited as positive examples for successful transport and land-use planning. In 1992, the Dutch Bicycle Master Plan made cycling an integral part of the national traffic system. In urban areas, up to a third of all trips are by bicycle. Traffic calming and pedestrian zones are ubiquitous throughout the country. In addition, a centralized and highly integrated public transport system provides a competitive alternative to car use, particularly in urban areas. This is further complemented by a national physical planning policy advocating 'Compact Cities' and 'Location Policies' that reduce the need to travel. Few other countries have gone as far as the Netherlands in limiting car dependency, but the world is increasingly taking note of the Dutch transport model.

In **Central Eastern Europe**, by contrast, motorization rates have skyrocketed in the last decade, with car ownership rates in Warsaw, Prague and Budapest now exceeding the European Union average. Yet people are paying a high price for their newly won automobility. The tram and trolley systems in the region used to be among the most affordable, most extensive and most user-friendly public transit options in the world. Now excessive car use is exacerbating the financial crises of the already struggling transit companies, most of whom are under-funded, mismanaged or both. It is a bitter irony that just as clever Western European and North American cities are rediscovering light rail as a major solution to urban transport problems (now wishing they had never abandoned their trams systems in the first place) Central



Figure 4  
Load Carrying in Ghana

European cities repeat their old mistakes: millions are spent on costly metro prestige projects while valuable dedicated surface tram tracks suffer neglect. Hundreds of miles of precious exclusive-way transit lanes were already abandoned and the space handed over to cars. With its clever Fast Tram idea – a concept that included a very cost-effective upgrading of existing tram track infrastructures – the Polish city of Krakow could have been a notable exception. Unfortunately, unfavourable political changes at the municipal level have recently put the innovative project in jeopardy.

Automobile dependency continues to be the most extreme in North America and Australia. Yet even Los Angeles, this epitome of a wasteful, low-density, sprawling, auto-dependent metropolis, recently completed several new light rail and metro lines. Marred by construction disasters, corruption scandals and planning mistakes, the actual systems put in place leave much to be desired, but their existence proves that even a culture as car-loving as Southern California is finally coming to terms with the fact that you simply cannot build your way out of the traffic collapse.

It is now empirically proven that new road capacity attracts new traffic (2). In practice, this means that new freeways are clogged the minute they are opened to the public. This is why even die-hard California motorists are willing to let go of their steering wheels in exchange for an early-morning and late afternoon lap-top session on the commuter train. This way, if they manage their time well, they can even leave the office an hour earlier than before. In addition to developing new mass transit systems, many US cities are now actively encouraging bicycle use (3). So the freedom of NOT owning a car and instead making a positive statement for health and environment is increasingly becoming an option even in the US.

Bus transport is still the predominant mode of transport in **South and Central American** cities, although they, too, have experienced strong growth in individual motorization. To take but one example, almost three quarters of the population in Bogotá, Columbia uses buses, while less than one fifth use private cars. To ease congestion and air pollution, the Bogotá city government

is presently pursuing several very innovative transport projects, including the implementation of a bicycle master plan and an adaptation of the famous Curitiba, Brazil express bus scheme. Called the TransMilenio, the latter project, which requires an investment of \$117 million in its first phase, will build over 40 kilometers of new high-capacity bus lanes on which a new fleet of 470 buses will be able to transport as many as 660 000 passengers per day (4). A new bicycle masterplan is to further diversify the transport options of the Bogoteños. Other Latin American cities are considering similar schemes.

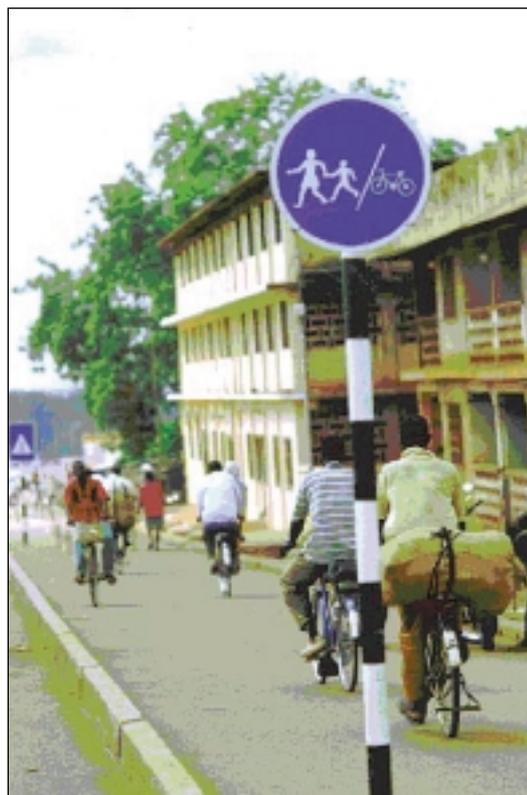


Figure 5  
Tamale Ghana

Quito, Ecuador already put its own electric trolley bus system into operation, complete with pre-boarding electronic ticket collection and automatic loading ramps that greatly reduced travel time. The initial investment for the initial 11 kilometers was a modest \$57 million (5). The Brazilian megacities of Sao Paulo and Rio de Janeiro, apart from developing their bus and metro systems, have also recently developed bicycle infrastructures. Lima, Peru has had a special Pilot Program for Non-Motorized Transport since the early 1990s. Given existing dangerous traffic conditions, widespread cycling only stands a chance if protective infrastructures are built. Once these are in place, ridership can grow quickly.

In **Asian** cities, the extremely high population densities ensure traffic standstills at much lower levels of motorization than in other parts of the world. Bicycles and cycle rickshaws are still very prominent. Unfortunately many cities now increasingly ban them from key sections of the urban road network, thus creating considerable access problems for the lower-income citizens dependent on non-motorized modes. Stemming good common sense against this troubling common tide, the Southern Indian city of Pune decided to instead provide separated paths for pedestrians and bicyclists alongside major arterials and at dangerous crossings. Simple adaptations or additions to existing lanes created over 40 miles of cycle track that presented substantial time savings and safety improvements to all network users (6). Meanwhile, efforts are currently underway in Delhi to modernize the traditional Indian cycle rickshaw. Targeted design improvements will make it more efficient to ride without substantially increasing its cost (7).

It is important to remember that dependence on particular modes of transport often has a strong gender dimension as well. One third of all women in Dhakka, Bangladesh are dependent on rickshaw taxis, for example. Their dependence is exacerbated by the cultural practice of *purdah* requiring the social segregation of men and women in public. This makes it highly unacceptable for

women to use crowded public transport. Dhakka has done some very minor experimentation with women-only bus services, but at present this is not a workable alternative to rickshaws for women.

Similar to South Asia, motorization in **Africa** has most prominently manifested itself in a two-wheeled form. Motorcycles are obviously much more affordable than cars, and also more flexible in crowded traffic. Nevertheless, the vast majority of Africans do not have access to any form of motorized transport, be it cars or motorcycles. Low-income people typically walk for many miles every day because they cannot even afford public transport fares. In this difficult context, access to a bicycle can truly transform people's lives, saving valuable time and transit costs. Unfortunately, bicycles are strongly stigmatized as 'poor man's vehicles' in much of Africa, especially in cities. This strong image and gender bias against this most energy efficient of all transport modes discourages many potential cyclists. Nevertheless recent success stories about NGO projects putting women on bikes in Mozambique, South Africa and Tunisia show that these biases can be overcome if approached in an appropriate, culturally conscious way (8).

Although often favoured by high-level decision makers, technological fixes will not get us out of the global transport mess. A general moratorium on cars and road building is of course an equally unsatisfying solution, if only because the vast majority of the world's population does not have access to cars, and often not even to other motorized vehicles. Dimensions of access, poverty and sustainable development have always been intricately linked. Curitiba-style buses, Fast Trams, and bikeways are but a few ways to untie the Gordian knot of sustainable mobility. But it is certainly ironic that even in the hypermodern cities of the 21st century, simple pedal power typically remains among your fastest transport options. Incidentally, biking is also affordable, improves your health, keeps your air clean, and your community intact. So cycles are the best zero emission vehicles to take you towards global sustainability.

## REFERENCES

- (1) You can find this statistic, along with many other interesting World Bank transport policy statements, in: 'Sustainable Transport: Priorities for Policy Reform,' published by the World Bank in 1996.
- (2) Of course, there are both supporters and dissenters of this view. For the particular case of California, one of the most important recent studies of 'induced' traffic is Mark Hanson's and Yuanlin Huang's 'Road Supply and Traffic in California Urban Areas,' published in *Transportation Research*, vol. 31A, No. 3, 1997, pp. 205-18. Probably the most authoritative study on the subject internationally is a 1994 UK government-sponsored study by the British Standing Advisory Committee on Trunk Road Assessment (SACTRA). The name of the study is 'Trunk Roads and the Generation of Traffic,' published in London by HMSO (Her Majesty's Stationary Office). SACTRA criticized that the economic benefits of road schemes were overestimated since they failed to take into account new costs derived from induced traffic. And according to SACTRA, new roads most often induced additional traffic where network were operating close to capacity, where people quickly respond to reduced travel times and where trips were suppressed by congestion. For an easily accessible online resource, see the report 'Generated Traffic';

Figure 6  
Village Bicycle Project Tsibu



Implications for Transport Planning' on the Victoria Transport Policy Institute Website ([www.vtpi.org](http://www.vtpi.org)). According to their director Todd Litman, the article 'summarizes a number of studies that show that under congested conditions, a major portion of additional road capacity is filled with additional vehicle traffic that would not otherwise occur, and that this can exacerbate other transportation problems, including downstream congestion, crashes, pollution and automobile dependency.'

- (3) Many US cities have made their bicycle masterplans and policies available on the web. For example, see [www.city.toronto.on.ca](http://www.city.toronto.on.ca), [www.gvcc.bc.ca](http://www.gvcc.bc.ca) (for Victoria, BC), [www.city.pittsburgh.pa.us](http://www.city.pittsburgh.pa.us), [www.landofsky.org/bikeped/bpplan.pdf](http://www.landofsky.org/bikeped/bpplan.pdf) (for Ashville, NC), [www.enteract.com/~cbf/index.htm](http://www.enteract.com/~cbf/index.htm) (for the Chicago Bikeland Federation).
- (4) For more information on the TransMilenio try: OSCAR EDMUNDO DIAZ, Counsel in International Matters, City Hall, Bogotá, COLOMBIA, Tels: (571) 352-1611, Fax: (571) 352-1618, Home Page: <http://www.alcaldiabogota.gov.co>, E-mail: [consnacion@interred.net.co](mailto:consnacion@interred.net.co), [diazoe@latino.net.co](mailto:diazoe@latino.net.co).
- (5) For more information see Cesar Arias' and Lloyd Wright's article 'Quito take the High Road' in Sustainable Transport magazine, No. 10, Fall 1999, published in New York by ITDP ([www.ITDP.org](http://www.ITDP.org)) or try: Ing. Cesar Arias, Unidad de Plaificatcion y Gestion de Transporte, Quito Metropolitano, PO Box 1717484, Quito, Ecuador, Fax593 2 432-643, email [Fraarias@uio.satnet.net](mailto:Fraarias@uio.satnet.net).
- (6) For more information on the Pune project, consult Tony Hathway's article in Sustainable Transport magazine, No. 4, Winter 1995 (see above footnote for publishing info).
- (7) For details on the Delhi project, see Walter Hook's article 'The Cycle Rickshaw can Save the Taj Mahal; the Taj Mahal can save the Cycle Rickshaw,' in Sustainable Transport magazine, No. 7, Winter 1997 (see above for publishing info) or contact ITDP.
- (8) For information on the South Africa project, contact Gustav Erlank at Afribike ([www.Afribike.org](http://www.Afribike.org) - or go through the ITDP website); for Mozambique, contact Amelia Zambeze at the Mozambican Association of Rural Women (AMRU) - no contact info available; for Tunisia, contact Dr. Kamel Esseghari at Women for Sustainable Development (WFSO), BP 377 2000 Bardo, Tunisia, Fax/Tel +216 1 510 714, email: [wfsd@francemel.com](mailto:wfsd@francemel.com)

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Since 1996, she has served as co-coordinator of the CSD NGO Sustainable Transport Caucus, which monitors the implementation of the transport-relevant sections of Agenda 21 and the Habitat Agenda. She is also currently completing a Ph.D. in Urban Planning and Policy Development at Rutgers University.