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## ECLAC CONTRIBUTES WITH NEW WORKSHOPS TOWARDS THE GOAL OF EASING TRAFFIC CONGESTION

A number of cities in Latin America played host to workshops on measures for reducing traffic congestion, as part of efforts to publicize the results of a project recently completed by ECLAC, and which received support from the German Agency for Technical Cooperation (GTZ). Congestion is beginning to pose a threat to the quality of life of the cities of the region; the most obvious manifestation of this congestion is the increase in daily travel time, especially in peak hours.

The workshops are a contribution to efforts to curb congestion, since they help foster awareness of the extent of the negative consequences generated by the phenomenon, and are a means of publicizing options for dealing with it. This edition of the Bulletin outlines the contents of the workshops and their results. The workshops are offered to urban authorities and other institutions interested in training staff employed in positions involving traffic management.

For further information, please contact Alberto Bull <[abull@eclac.cl](mailto:abull@eclac.cl)> or Ian Thomson <[ithomson@eclac.cl](mailto:ithomson@eclac.cl)>

### BRIEF DESCRIPTION OF THE WORKSHOP PROGRAMME AND POSSIBLE ACTIONS PUT FORWARD

The workshop was structured to take place over two afternoons, in such a way as to ensure greater attendance. The following topics are analysed in four sessions: (1) the nature of congestion and the local situation; (ii) actions that have an impact on supply or transport systems; (iii) actions that have an impact on demand or the number of trips and the systems used; and (iv) the appropriate methods of implementation for the city where the workshop is taking place. These workshops target municipal authorities, staff involved in transit management and urban development, officials from transport ministries, traffic police, carriers, transport consultants, university researchers, professional associations of engineers and architects, and manufacturing and retail associations. See the table for details of the programme. The following international speakers took part in the workshops:

- Mr Cesar Arias, Professor and consultant on urban transport issues, and the person responsible for implementing the trolleybus system in Quito;
- Mr Nelson El Hage, former Chairman of Companhia de Engenharia de Trânsito de São Paulo;

- Ms Irma Chaparro, ECLAC consultant and author of an appraisal of the Transmilenio system of Bogotá;
- Mr Alan Thomas, coordinator of modelling studies at SECTRA (Executive Secretariat of the Transport Investment Planning Commission), an agency of the Government of Chile;
- Mr Alberto Bull, coordinator of the joint ECLAC/GTZ project on reducing traffic congestion; and
- Mr Ian Thomson, Chief of the Transport Unit of ECLAC, who has many years of experience with analysing urban transport problems.

## TYPICAL WORKSHOP PROGRAMME MEASURES FOR REDUCING TRAFFIC CONGESTION

### 1<sup>st</sup> afternoon

2.30 p.m. *Registration of participants*  
2.45 p.m.-3.15 p.m. **Opening**

### **Session 1**

3.15 p.m.-4 p.m.	<b>Urban congestion and its impact</b>	I. Thomson/A. Bull
4 p.m.-4.30 p.m.	<b>Situation of the host city</b>	Local speaker
4.30 p.m.-5.00 p.m.	<i>Break</i>	

### **Session 2**

5.00 p.m.-7.00 p.m.	<b>Actions that have an impact on supply</b>	
5.00 p.m.-5.15 p.m.	General concepts on the design of intersections lane design, demarcation, reversibility of lanes traffic light coordination	A. Bull
5.15 p.m.-5.45 p.m.	Summary of specific applications	N. El-Hage
5.45 p.m.-6.30 p.m.	Priority for public transport	C. Arias/I. Chaparro
6.30 p.m.-7.00 p.m.	<b>Discussion on supply initiatives</b>	

### 2<sup>nd</sup> afternoon

### **Session 3**

3.00 p.m.-5.00 p.m.	<b>Actions that have an impact on demand</b>	
3.00 p.m.-3.45 p.m.	Staggering of schedules, parking restrictions	A. Bull
3.45 p.m.-4.15 p.m.	Road pricing	I. Thomson
4.15 p.m.-4.30 p.m.	Vehicle restrictions	N. El-Hage
4.30 p.m.-5.00 p.m.	Strategic planning, analytical models	A. Thomas
5.00 p.m.-5.30 p.m.	<i>Break</i>	

### **Session 4**

5.30 p.m.-7.00 p.m.	<b>Panel: What actions can be taken in this city?</b> Panel members present various proposals and priorities concerning the process of change, followed by public discussion.	
7.00 p.m.	<b>Close</b>	

## **THE NATURE OF CONGESTION AND THE LOCAL SITUATION**

Though frequently used, the term ‘traffic congestion’ is largely undefined: even some of the most renowned academic texts on urban transport and transit fail to come up with a credible definition. Accordingly, the workshop starts off by furnishing a definition, based on theory but applicable in practice, so that people can be aware of when traffic congestion is actually taking place. The causes of congestion are then analysed, and it is concluded that the motor vehicle is primarily to blame, since the occupant of a car generates 11 times the congestion caused by a fellow resident who uses public transport. However, the answer to the problem does not lie in forcing an arbitrary percentage of car users to switch to buses, as the actual cost of making several trips by bus instead of by car may be extremely high; a doctor’s visits to the homes of sick people is one example. In each situation, there is an optimal percentage of trips that should be made by bus rather than by car, and vice versa.

A further factor contributing to congestion is substandard management and maintenance of roading infrastructure in many of the cities of Latin America. Another important consideration is the explosion in recent years of motor vehicle ownership among people in Latin America. It is not the fact of owning a car that causes congestion, but rather its use in places and at times that would be best avoided. Having said that, it is obvious that you cannot use a car if you don’t actually own one.

It can be concluded that congestion is not only inevitable but is also, to some extent, convenient (in the sense that it is the least worst alternative), since the costs associated with some degree of congestion will be lower than those involved in attempting to eliminate it, through extensive widening of the urban road network, which is a fast track to nowhere, or forcing travellers to switch from cars to public transport. Policies must aim to ease the situation through the implementation of a package of measures, some addressing demand and others supply; the aim should be to transfer trips from some roads to others, from some modes of transport to others, or from some periods of the day to others, up to the point where the social cost or inconvenience of one more transfer exceeds the value of the benefits it brings to the community.

Up to this stage, the workshop focuses on basic concepts or theory. Normally, after the introductory section, the person in charge of traffic management in the city hosting the workshop is invited to give a talk on the local situation, which is a useful way of setting the stage for the discussion on solutions.

### **ACTIONS THAT HAVE AN IMPACT ON SUPPLY**

Supply refers to roads and intersections, signs and traffic lights, motor vehicles and the way all these systems are deployed. Contrary to what might be assumed, it has been shown in a number of cities, at a high economic and social cost, that the construction of large new infrastructure projects does not resolve the problem. However, a suitable approach, whose details would depend on the particular case, would encompass roadworks, greater in number but substantially reduced in magnitude. Of special importance in this regard are intersections, which often constitute the critical points of a road network, and where even small actions can produce valuable increases in capacity. Even greater potential benefits can be derived from the different options for upgrading vertical or horizontal signage systems and traffic lights, including installation of urban traffic coordination systems, such as the TRANSYT system or the more advanced SCOOT system. As regards roads between intersections, it is often possible to achieve significant increases in capacity by means of minor widening or demarcation of lanes. Other options include reserving the entire width of specific roads for traffic in the direction of heavier volume in peak periods or setting aside road space for public transport.

This latter option is accorded special attention in the workshop in speeches by experts from cities which have implemented state-of-the-art systems involving buses which travel on roads dedicated exclusively for their use. Some of the cities in question are Curitiba, Quito and Bogotá. Generally speaking, the outlay required to install these systems does not exceed 6 million dollars per kilometre, and these arrangements

have proved capable of carrying more than 20,000 people per hour in each direction at a speed of approximately 25 kilometres per hour. This means that their productivity is close to that of some metro systems, for a fraction of the cost.

This session examines some aspects of traffic management in São Paulo, one of the largest cities in Latin America and indeed the world, with some 17 million inhabitants, most of whom live within the limits of the Municipality of São Paulo. The Companhia de Engenharia de Trânsito has had noteworthy success here in maintaining reasonably fluid traffic flows. A range of specific initiatives are complemented by traffic education and PR campaigns. Education on traffic safety matters starts at a very early age, and is a part of the curriculum of children, young people and even adults; canvasses, clowns, musical groups and other suitable means are used to attract attention with a view to ensuring everyone behaves more responsibly on the roads. In other words, communication takes place in a language that can be easily understood.

### **ACTIONS THAT HAVE AN IMPACT ON DEMAND**

The first session of the second day features an in-depth examination of initiatives that address demand. One initiative calls for placing restrictions on parking capacity, particularly in areas zoned commercial. Typical options range from the least efficient, but easiest to implement, such as restrictions on street parking in areas with no parking meters, to the more efficient, though also more difficult to put in place, such as bans on varying types of parking in a particular part of the city.

Other possibilities including staggering the starting times of different activities in the city and vehicle restrictions based on the last digit of the number plate. A case in point is São Paulo, where two basic variations on this measure have been introduced: (i) one providing for restrictions that apply during all daylight hours throughout the metropolitan region, whose main aim is to curb air pollution; and (ii) another, applied within a more limited central area, in force only during rush hours, which is aimed primarily at traffic control. As a general rule, the latter has proved to be more effective, since it doesn't stop a person with a strong preference for travelling by car from being able to do so, provided that they travel later or earlier than they normally do. Another factor in favour of the second option is that it reduces the likelihood of a person buying an additional car, whose number plate ends in a digit other than that of the car they normally use, in order to get around the restriction.

Another measure of interest is road pricing, which can be illustrated both in theoretical terms and by means of the few examples of practical application of the concept. In addition, an outline is given of the advantages and disadvantages of road pricing, both from the conceptual and practical standpoints. Road pricing is favoured by many transport economists as an option for dealing with congestion, but it has serious potential drawbacks, especially in the Latin American context, such as urban sprawl, and as a consequence the adoption of lifestyles based almost exclusively around the car, which is not sustainable in the long term.

With the support of the German Government, an ECLAC project examined measures such as parking restrictions, various road pricing options, segregated lanes for public transport, and the use of de luxe buses on city runs. The analysis took the form of a sophisticated package of urban transport simulation models and assessment of alternatives, and this is presented in the final phase of this session. This section provides a general overview of how the analysis is conducted and the databases it uses as inputs.

### **WORKSHOPS CONDUCTED TO DATE**

The Workshop on Measures to Alleviate Traffic Congestion was conducted in Guatemala City, Guatemala (18-19 July, 2001, 85 participants), Lima, Peru (28-29 August, 2001, 130 participants), Guayaquil, Ecuador (5-6 December, 2001, 80 participants) and Campinas, São Paulo, Brazil (17-18 April, 2002, 110 participants). In addition to these workshops, an international seminar on the topic was held at ECLAC Headquarters on 20-21 March 2002, with representatives from virtually all the major cities on the continent in

attendance. Workshops were not only well attended but they attracted a varied audience, in the sense that participants were drawn from practically the entire range of people involved with, or interested, in urban congestion. Press coverage of the event was also good.

The highlight of each workshop was without doubt the final panel, characterized by animated discussions of feasible steps that could be taken in each city. Given that the aim of the meetings was to publicize the topic, no attempt was made to arrive at formal conclusions. Never the less, some common themes emerged from the succession of presentations as to what anti-congestion measures appeared viable in local contexts; for that reason, the proposals varied according to the city, confirming something that is already general knowledge, namely that each specific situation requires a particular approach.

Notwithstanding the above-mentioned diversity, there were certain common approaches. There was, for example, universal agreement as to the need to reorganize and improve public transport, as a means of facilitating travel and reducing the travelling time of users of public transport, while at the same time preventing the proportion of trips currently made on it from falling. Some workshops put forward the idea of giving public transport priority as a starting point, inaugurating experimental bus only lanes on one or more roads.

A further recurring theme was that of improving management, in order to get the best possible use out of existing roading infrastructure, by upgrading road signs and the traffic light system and improving the design of intersections. Education about road safety was also accorded great importance, the idea being to inculcate all road users, whether travelling by car or on foot, with a real respect for the rules of the road; this was viewed as a crucial contribution to reducing accidents and easing congestion. Furthermore, the need was stressed to come up with a strategic vision for the long-term development of cities that could reconcile growth and competitiveness, vital elements in today's world, with the sustainability of the actions implemented and the quality of life of city dwellers.

### **REMARKS BY WAY OF A PRELIMINARY CONCLUSION**

Given that the workshops were attended by a wide range of people, the conclusions reached may in a way reflect the opinion of citizens.

Of particular note was the strong tendency to favour actions that have an impact on the supply of transport. This is somewhat logical, in that those sorts of actions contribute to improving the flow of traffic, thereby benefiting all users, with the advantage that users do not have to bear the costs involved in implementing them. Furthermore, it should be acknowledged that supply initiatives are perceived as an obligation on the part of the authorities, who are expected to provide special services to citizens in return for taxes paid. In any event, some measures, such as reversibility of lanes, adjustment of intersections and demarcation, are typically low in cost, and for that reason they deserve to be included in government budgets.

Actions that have an impact on demand were not so readily accepted, due to the fact that they involve restrictions on the use of cars, and this goes against the heartfelt desire of Latin Americans to get around by private means of transport. The exception was Campinas, a city which has one vehicle for every two inhabitants; this situation, which mirrors that in the developed countries, exercises strong pressure on parking space, and explains why there was support for the introduction of restrictive parking regulations in the centre and university campuses.

For decades now, traffic experts and transport economists have been emphasizing the need to adopt demand initiatives. Some such initiatives will undoubtedly be implemented in Latin America. In fact, some, such as deferment of the start times of activities, certain types of controls on parking and vehicle restrictions, are employed to different degrees in some cities in the region.

It seems logical to begin tackling congestion in the recommended way, through supply initiatives. The infrastructure currently in place has many shortcomings that need to be addressed. Similarly, a great deal of benefit can be expected from improvements to the management of, in particular, traffic lights and a reorganization of public transport.

Demand initiatives should not be ruled out, though perhaps they can be implemented comprehensively only once the level of congestion convinces motorists that they are acceptable. Thus, there may come a time when even the most drastic option of all, road pricing, finds favour among the populace. Congestion is showing no signs of disappearing, so it will be necessary to undertake on-going actions to keep it under control.

It is clear that car users are prepared to tolerate a certain level of congestion, as yet undetermined in the region, on account of the associated advantages. While it is certain that the consequences fall on the very people causing the problem, it is necessary to shield other inhabitants of the city from them. That justifies granting priority to public transport, so that it is not held up by congestion, setting aside suitable areas for pedestrians and keeping a tight rein on pollution emissions.

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