

# **ACCESSIBILITY FOR ALL; A CASE STUDY OF PUNE CITY IN INDIA**

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## **SUMMARY**

The paper describes the Indian component of an international project which commenced in October 2001 and has as its goal the publication (in March 2004) of comprehensive guidelines to assist planners, policy makers, transport operators and disability organisations take account of the access and mobility needs of disabled people in urban areas of the developing world. It involved carrying out a small scale low cost demonstration project wherein bus stands along an extremely busy bus route in Pune were modified to make them more accessible for all passengers but especially for those with disabilities. The onus was on physical as well as informational accessibility. In addition, accessibility modifications suggested to the bus company in Pune City, the Pune Municipal Transport (PMT) were incorporated into the fitting out of their new buses. Surveys were conducted before commencement as well as after completion of the demonstration project to obtain feedback of the project from various users. Also, volunteers with disabilities gave their feedback on the efficacy of the modifications. The major conclusion from the study in India is that taking account of financial constraints low cost solutions as implemented in Pune are able to be effective in meeting some of the transport needs of disabled persons.

## **1: Introduction**

This paper gives a detailed account of a demonstration project undertaken in Pune City, India. This demonstration project was undertaken as part of the Department for International Development (DFID) funded project titled “Enhanced Accessibility for Persons with Disabilities in Urban Areas”.

The project has been undertaken in three phases across four countries viz. India, South Africa, Mozambique and Malawi. The first phase involved a detailed needs analysis study of the accessibility levels prevailing in each country by means of interviews, focus group discussions and meetings with various disability forums and NGO’s. In addition, this stage also involved a review of current practices in the same countries but also in Europe, USA and Latin America. This phase highlighted a number of barriers people with disabilities encountered whilst travelling by public transport in urban areas (see Venter et al., 2002; Venter et al., 2003) and served as a useful input for the second phase, which involved undertaking small-scale demonstration projects in the countries of study. Phase three involved the drafting of a compendium of guidelines to facilitate universal accessibility. The findings of the demonstration projects both positive and negative have been incorporated into the guidelines.

## **2: Details of demonstration project undertaken in Pune City**

A group comprising researchers, disability NGO’s, City transport planners and the management of the local bus company was established in Pune to select and oversee the demonstration project. The group decided to modify bus stands at bus stops along a single route for two main reasons: this component of the trip chain was found to be ignored in many studies and secondly, since there was already a movement to make the buses more accessible on the part of the Pune Municipal Transport (PMT), the local bus company in Pune city, it was thought that concentrating on accessible bus stops would compliment the bus initiative.

The research team decided to adopt route number five of PMT, passing through an extremely busy corridor connecting Pune railway station and Swargate bus terminal. The route was chosen for the following reasons:

- A number of clinics and public offices visited by people with disabilities were located along the route.
- The route covers a relatively short distance of around six kilometres and travels along very narrow roads which are heavily congested. Thus the route and vehicles using it would be typical of Pune City’s road network.
- The short route would also enable effective monitoring.

To address some of the barriers people with disabilities encountered travelling by bus a number of modifications were made to the existing bus stands such as:

- Provision of benches of appropriate height (see figure 2), which would be of use to all passengers, particularly for those with mobility impairments.

- Provision of route information boards containing information in clearly visible text regarding the route numbers, origin and destination, frequency as well as timings of first and last bus mainly to benefit the hearing impaired persons as well as those with communication difficulties (see figure 3).
- New signs were designed which contained a pictogram of a bus, as well as bus route numbers which service the stop (see figure 4).
- Removing any structures or protrusions along the pavement, which would prevent unhindered movement of passengers to as well as within the bus shelter.
- Providing appropriate colour contrast within the bus stand (see figure 3). For instance, dark coloured pillars were painted with white strips so as to enhance the visibility of the same during night times particularly for the benefit of those with low vision
- Apart from modification of bus stands along route five, the demonstration project also involved monitoring the effectiveness of new buses acquired by PMT. These buses following advice from the research team were equipped with wider entrances, lower first steps, step lights, grab rails at the doors (see figure 5) as well as stanchions within the bus, priority seats for persons with disabilities and wider aisles. Some of the new buses also had a public announcement system and a bell and light operated by the driver to indicate the bus was stopping.
- PMT had also introduced a disability awareness training programme for their drivers and conductors (see figure 6). The demonstration project examined whether disabled passengers perceived any change in the service they received from staff.

In response to requests from local disability groups, a tactile guideway was also installed at some of the bus stands to guide visually impaired passengers from the bus stand to the bus entrance. These tactile surfaces were designed and developed locally.



Figure 1: Bus stand before modification



Figure 2: Modified bus stand



Figure 3: Bus stand information board



Figure 4: Bus stop stand



Figure 5: Passenger using grab rail to board the bus



Figure 6: PMT staff during a disability awareness course

### Section 3: Evaluation of the demonstration project

Passenger surveys were conducted both before and one month after the completion of the work on bus stands. During this time PMT began to take delivery of some of the new bus fleet and allocated some to route 5. General type passenger surveys were undertaken at all the bus stands along the route in both directions to allow an assessment of the acceptability and effectiveness of the modifications by both disabled and non-disabled passengers. In addition, a number of journeys were undertaken by passengers with disabilities.

As part of the surveys passengers were asked if and how they used the bus stand. Figures 7 and 8 indicate that passengers tended to use the area inside the bus stand more after the bus stands were modified than before. However, the passengers remarked that since buses continued to stop far away from the shelters and also for a very short time, many passengers still preferred to wait outside the bus shelter area. Clearly evidence for better training of drivers to service bus stands properly rather than just the general vicinity near to the stands.

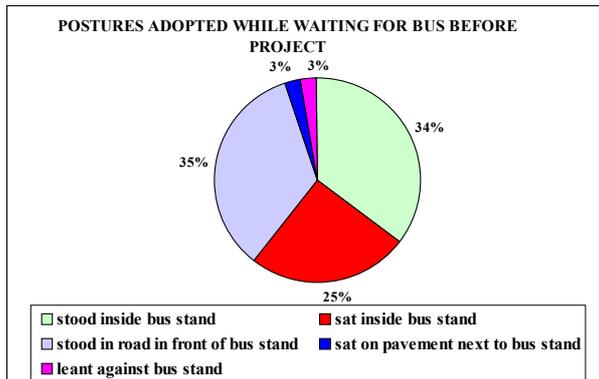


Figure 7: Passengers use of bus stands (before survey)

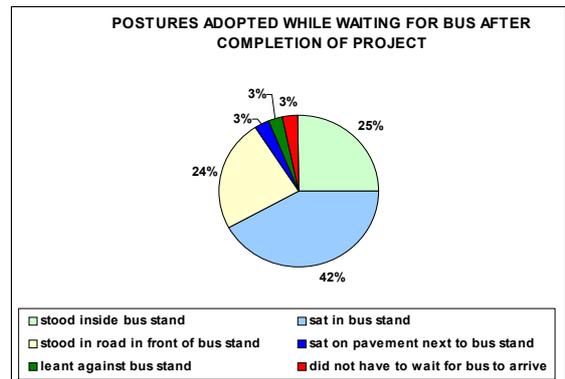


Figure 8: Passengers use of bus stands (after survey)

The information provision at the bus stops was examined. Figures 9 and 10 suggest that passengers were generally of the opinion that the information available was clearer after new information boards were installed at the bus stands. However, some passengers were of the opinion that the information boards should be illuminated for greater visibility during darkness. As one passenger commented: *“it is all very nice and useful during daytime but during the night we cannot get benefit of these boards... it would be very nice if they were illuminated”*.

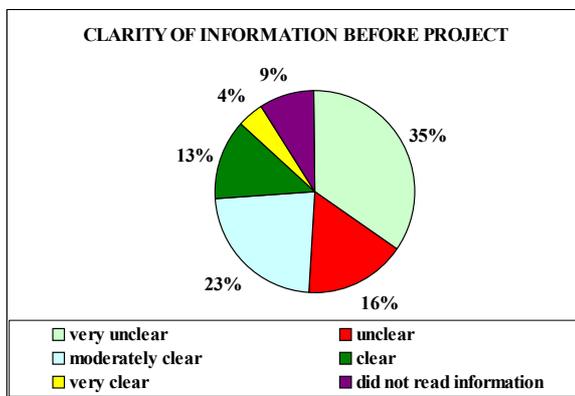


Figure 9: Clarity of information at bus stop (before survey)

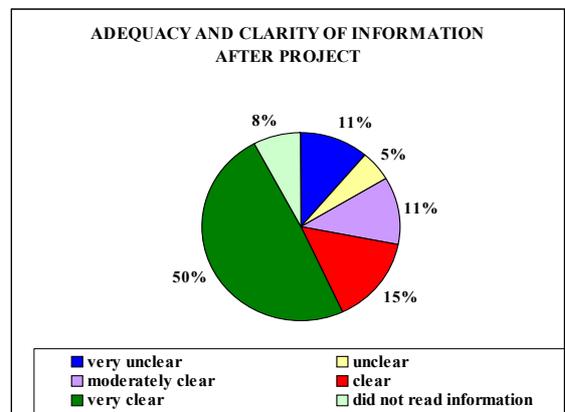


Figure 10: Clarity of information at bus stop (after survey)

To assess the effectiveness of the new bus designs, passengers were asked to rate how easy or difficult it was to perform various tasks, such as to board the bus. The percentage of passengers who described boarding as “difficult” or “very difficult” decreased from 65% to just 20% following the new vehicles introduction. Many passengers reported that it was easier to board and alight the new buses with the relatively low first step height as

compared to before. One passenger was quoted as saying: “*I suffer from mild arthritis and these new buses are slightly easier for me to board*”.

**Table 1: Ease of bus travel (before survey)**

	<b>Very easy</b>	<b>Easy</b>	<b>Moderately difficult</b>	<b>Difficult</b>	<b>Very difficult</b>
Find the correct bus stop	13%	73%	6%	8%	0%
Identify the bus you needed	14%	66%	6%	11%	3%
Boarding the bus	4%	14%	17%	39%	26%
Move within the bus	4%	19%	20%	37%	20%
Get into a seat	4%	14%	23%	29%	30%
Stand within the vehicle	1%	20%	24%	36%	19%
Identify alighting stop	47%	29%	7%	10%	7%
Alighting the bus	17%	11%	9%	30%	33%

**Table 2: Ease of bus travel (after survey)**

	<b>Very easy</b>	<b>Easy</b>	<b>Moderately difficult</b>	<b>Difficult</b>	<b>Very difficult</b>
Find the correct bus stop	7%	67%	12%	9%	5%
Identify the bus you needed	7%	63%	16%	11%	3%
Boarding the bus	7%	62%	11%	16%	4%
Move within the bus	2%	57%	20%	18%	3%
Get into a seat	4%	51%	23%	15%	7%
Stand within the vehicle	5%	48%	23%	21%	3%
Identify alighting stop	6%	63%	16%	10%	5%
Alighting the bus	7%	65%	15%	11%	2%

Following the general passenger surveys, journeys were undertaken by groups of disabled passengers who made their own assessment of the bus stands and the new bus designs. These passengers were observed by survey staff who monitored the journeys without interfering when events occurred. Passengers boarded and alighted at many stands along the route.

*Journeys with visually impaired volunteers:*

Six visually impaired volunteers participated in the study. While using the bus stops they found the tactile blocks, which guided them to the bus entrance as useful; however, they said that they would have to get accustomed to them and of course there was the need for

bus drivers to stop the bus in the correct position on the stand for boarding and alighting. Those who were partially sighted found the colour contrasting strips on the pillars useful (see Figures 2 and 3) and said that they had long wanted something similar to the same.

Whilst boarding the bus, it was observed that the driver waited patiently for all the visually impaired passengers to board and only then started the bus. The conductor ensured that they all got seats. He informed them when the bus reached their stop and helped them alight. All this was noted by the researcher who travelled a short distance from the respondents. This was true for all the legs of the journey along route number five involving visually impaired volunteers. The volunteers remarked that even during their regular daily bus journeys the staff attitude was quite co-operative.

*Journey with hearing-impaired volunteers:*

Two hearing impaired volunteers participated in the study. As regards the modifications in the bus stands, they were of the opinion that the route information boards were of immense help to them. However, regarding information boards on bus stands, they suggested that the same be illuminated for enhanced visibility, particularly at night. They were of the opinion that since the new buses of PMT too did not display route numbers prominently, so it was hard to find the correct bus especially at night. The participants also felt the need to display route maps in the buses so that they could be sure of the route particularly while travelling along unfamiliar routes. Finally, drivers did not effectively use the electrical audio-visual devices installed in the buses of PMT, which further reinforces the need for a device, which is driver-independent. Furthermore, it was observed by the researcher that the bus staff did not appear to be aware of hearing impaired passenger's needs.

*Journey with mobility impaired volunteers:*

Four people who used a walking aid (e.g. crutches) participated in the study. Overall, they found the improvements made to the bus stands to be satisfactory, but some of them felt that the height of some bus stands from the road was too high. It would appear as though this aspect needs to be tackled at the design and construction stages of the bus stand itself. They found the modifications to benches to be quite useful since the higher benches were far more comfortable.

These volunteers felt that the buses parked way too far from the shelters for comfortable boarding and alighting. Thus they had to alight from the shelters, move along the road towards the bus and board in a short amount of time. One bizarre incident was recorded at the time of boarding the bus. A lady with crutches was boarding the bus right in front of the conductor. She had hardly climbed the second step of the bus when the conductor gave the driver the go ahead signal. The lady was almost thrown off the bus. This caused a furore among the passengers some of whom threatened to report the conductor to the authorities. The volunteers were of the opinion that the lower height of the first step was helpful as compared to before but were desirous of a really "low floor" bus.

## 4: Conclusions and Recommendations

Although the demonstration project was an input into the international study, which is drafting a compendium of guidelines to incorporate access and mobility issues of disabled persons, the demonstration project implemented in Pune can be assessed in its own right and can provide valuable feedback for the guidelines themselves. Travel involves a whole chain – including getting to the bus stop or rail station (usually to and from by foot), boarding and alighting, and travelling in the vehicle. Incremental improvements should be seen as a necessary part of removing major barriers that will eventually enhance mobility. What is clearly evident is that **all** travellers/passengers gain from even minor improvements to the transport chain not just disabled travellers so that it is a “*win win*” situation.

Key conclusions from the Indian demonstration project are as follows:

- The benefits of the demonstration project were perceived both by passengers in general as well as those with disabilities as is evident from the findings.
- The relative effectiveness of the modifications to bus stands demonstrates that even small-scale cost effective modifications to transport infrastructure can assist a great deal in facilitating universal accessibility.
- The study has also effectively shown that involvement of all stakeholders in a project right at the outset can usually yield favourable results. In this study, from the very outset, the research involved persons with disabilities, non-disabled passengers as well as officials of the bus company, PMT and City transport planners. Hence the aspirations, expectations as well as constraints of all groups could be fully understood and appreciated.
- The evaluation revealed that there is a dire need to increase the disability awareness of drivers and conductors to make them aware of the problems faced by persons with disabilities. PMT management have initiated this but clearly more needs to be done. The bus staff observed seemed quite sensitive to the problems of vision impaired passengers but not other disabilities, especially hearing impairments, which are often ‘hidden’.
- Another issue in relation to bus drivers is the need for them to service the bus stand directly and park the bus alongside the shelter rather than nearby and thus making all passengers have to board and alight in the road rather than at the shelter itself.

## References

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Further information about the project can be found on the DFID website: [www.transport-links.org](http://www.transport-links.org)