



August 2017

Report on the workshop



Transport and Mobilities: Meeting the needs of working women



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**Foreword by Professor Karen Lucas,
INTALInC Director**



INTALInC is designed to bring researchers and other key stakeholders together to discuss and expose the links between people's mobilities and the opportunity to

participate in important life-chance opportunities such as employment, education, and healthcare and welfare services.

Our mission is to provide the evidence to ensure that *every human being has a basic right to affordable, safe, clean & reliable mobility resources, with a particular focus on meeting the accessibility needs of low income populations and excluded communities.*

This second report from the INTALInC project focuses on the workshop that was held in Dhaka, Bangladesh in August, 2017.

The Dhaka workshop focused on understanding the needs of working women, and we were particularly interested to hear about material workers, who are some of the poorest in the city. They also have some very specific needs around transport and concerns about their wider mobility freedoms due to their shift-working patterns, household responsibilities, and high levels of dependence on walking as their main mode of available transport.

Unfortunately, for reasons of physical practicality, we were unable to visit a factory to talk directly with the female workers about these concerns. It simply wasn't possible to travel across the city to the places where they work, at the right time to catch them on their commuting journeys within a reasonable timeframe during the day.

This was a repeated situation for other aspects of our study trip, as no matter what the time of day or destination within the city, it is virtually impossible to traverse Dhaka City in a reasonable journey time due to the extremely high levels of traffic congestion throughout the metropolitan area.

The first thing that hits you when entering the city is the chaotic and unpleasant nature of its overall transport environment. The road traffic is everywhere at every hour of the day: largely unregulated, unmanaged, noisy, smelly and dangerous. In-vehicle journey times are also extremely long. It took us 45 minutes to travel from our hotel to the University – a journey that took only eight minutes on foot.

Nevertheless, walking is not seen as much of a mobility for anyone who has a choice. As in most developing cities, the pavements are either non-existent or in an extreme state of disrepair. Where they do exist they perform a variety of competing functions, from car and motorcycle parking space outside buildings, to sites for street trading, to convenient spaces for piling up the rubbish from local markets and food stalls.

Even the dedicated walking infrastructures are not fit for purpose, both pedestrian underpasses and footbridges are inhospitable and unsafe places to be. Given the urban space allocated to walking facilities, it is hard to believe that around 40 per cent of trips in the Dhaka Metropolitan Region are on foot.

In the workshop, we heard that everyone's hopes are pinned on the new bus rapid transit and metro-rail schemes that are soon to be introduced in the city, and the planned super-highway programme, to solve these traffic problems. These large projects hardly seemed relevant to the micro-level mobility problems of low income residents identified by the participating researchers and NGOs who are working directly with these communities. Most low income populations will never use, or reap the benefits from these new infrastructures.

Instead, they require much smaller scale, localised community projects, which will: *a) improve the physical walking environments in their neighbourhoods and across the City as a whole, and b) make public buses safer for everyone to use, particularly women, who are exposed to high levels of harassment from male passengers and the drivers and conductors of buses.*

It was my own personal conclusion, that what Dhaka needs to run alongside of its current

Metropolitan Transport Plan is a comprehensive, community-led Walking and Cycling Strategy to promote safe routes for all, but especially women and girls, as an important part of its local programme for Sustainable Development Goals delivery.

Karen Lucas

November 2017

Introduction and overview of the report

As part of 'International Network for Transport and Accessibility in Low-income Communities' (INTALInC) workshop series, the second workshop '**Transport and Mobilities: Meeting the needs of working women**' was held in Dhaka on 19 – 20 August 2017 at the University of Asia Pacific, Bangladesh. As its title suggests, the workshop specifically focused on women's transport needs, bringing together on one collaborative platform academic researchers from the nine INTALInC partner universities with four universities in Dhaka, Government officials of Dhaka Transport Coordination Authority (DTCA), Non-Government Organisations, Asian Development Bank (ADB), World Bank and researchers working on this topic.

The workshop involved a series of presentations by academic staff from the University of Asia Pacific, Bangladesh, University of Engineering and Technology, Shahjalal University of Science and Technology, University of Aberdeen (UK) and University of Leeds (UK) and by non-academic experts from ARK foundation and Work for a Better



Bangladesh. This led to extensive discussion around the research gaps focused on the needs of women in Dhaka. A summary of the presentations and discussions are presented in this report. Slides of the presentations can also be downloaded from <http://intalinc.leeds.ac.uk/media/asia/>

Practical fieldwork was central to the workshop agenda and participants took part in two field trips:

- Observing and experiencing an Auto-Rickshaw CNG ride; and
- Observing women's issues at a bus stop.

The research workshop findings will be disseminated to local and national decision makers, and wider INTALInC partners, in order to improve the transport, mobility and accessibility opportunities of women in Dhaka.

Context of the Workshop

Bangladesh is projected to be one of the fastest growing economies in the world by 2050 (PwC 2017). It has already attained significant successes in achieving its country-specific Millennium Development Goals (MDGs) set by the United Nations Development Program (UNDP 2015). In particular, the third MDG goal: *promoting gender equality and empower women*, Bangladesh has achieved the targets of gender parity in primary and secondary education at a national level. The target was achieved by increasing the country's net enrolment rate at the primary school level from

80 per cent in 2000 to above 90 per cent in 2015 (Banerji, 2017; United Nation Development Program, 2015). Furthermore, the percentage of children completing primary school is close to 80 per cent. With nearly 6.4 million girls in secondary school in 2015, Bangladesh is among the few countries to achieve gender parity in school enrolment, and have more girls than boys in the secondary schools.

The next target for Bangladesh is to meet the related Sustainable Development Goal 5: Gender Equality (SDG 5): realising the human rights of all and to achieve gender equality and the empowerment of all women and girls by 2030 (UNDP 2015). Safe and efficient mobility options for women and girls, enabling them to access education and employment facilities, is an essential prerequisite for meeting this target. The workshop **‘Transport and Mobilities: Meeting the needs of working women’** was therefore a timely initiative to reflect on how Bangladesh is progressing in this mobility aspect, to identify any research and data gaps, and to generate research and partnership ideas for the way forward. This was a remarkable platform where researchers, academics, Government officials, and NGO workers came forward to openly share their views on this topic and found several different research avenues to explore in the future.

National-level SDGs aim to end all forms of discrimination against all women and girls. Informal data, as well as recent research, indicate that Bangladeshi women and girls do not get adequate and similar access as men in terms of access to employment, educational institutions or shopping centres (Rahman & Nahrin, 2012). For example, a survey on women bus users found that 49 per cent of commuters experienced harassment ‘sometimes,’ where 36 per cent experienced harassment ‘suddenly’ and on average every day, harassments were experienced by 3.33 per cent women (Islam et al, 2016). It may be noted that providing equitable access to education and employment is not only a basic human right but is also core to delivering the SDG and the New Urban Agenda (that was agreed at HABITAT III conference at the end of 2016 in Quito, Ecuador) (FIA Foundation, 2016). To make improvements in this crucial area, it is necessary to form a collaborative research approach within different public policy stakeholders.

Dhaka, the capital city of Bangladesh, currently accommodates about 9.3 million people (Bangladesh Bureau of Statistics, 2015). Being the main commercial centre of Bangladesh, Dhaka offers lots of income generating opportunities and is the main employment hub for working women. About 5,100 garment factories are situated in Dhaka employing 10 million workers directly or indirectly of whom about 85 per cent are women (Islam et al. 2014). However, the mobility options of these women, who are significant drivers of the country’s economy, is insecure due to the unavailability of adequate, affordable and safe transport systems. This is made worse by the chaotic

nature of traffic organisation across the city as a whole, as well as extremely poor walking environments.



Dhaka's commuters use different types of modes, such as bus, rickshaw, auto-rickshaw CNG, and car for their commute. According to Strategic Transport Plan, Dhaka's modal share is dominated by non-motorised transport (walking 14 per cent and rickshaw 34 per cent) and public transport (44 per cent) (The Louis Berger Group, & Bangladesh Consultants Ltd., 2005). Dhaka's transportation system is road based, and only around seven per cent of land is dedicated to transport infrastructure (Chowdhury, 2014). The key transport issues for Dhaka commuters as a whole are an inadequate balance between supply and demand, the inadequate and inefficient road network and public transport system, and a lack of coordination among the organisations involved in the transport sector in Dhaka.

Furthermore, the drawbacks of Dhaka's congested roads include excessive travel times by all modes, overcrowded buses, the unhealthy travelling conditions on buses, long waiting times, unreliability, lack of provision of safety and security. In the case of working women, the situation is made far worse by abuse of female passengers by male passengers, and by drivers and helpers (Nasrin, 2015). Further, as part of a patriarchal society, girls and women in Dhaka do not feel comfortable riding on overcrowded buses. They have cultural constraints for properly accessing public transport because of social seclusion (seclusion of women from men) (Peter, 2013). Social seclusion defines separate places for men and women (Shefali, 2000). Women themselves want separation from men inside buses. Also, because of their cultural attitudes and natural inclination, women cannot defend themselves from coarse misbehaviour or physical touching on public transport most of the time, which leads them to confine their mobility (Mannan & Ahmed, 2014). According to Shefali (2000) the inability of the existing transport system to address the specific needs of women places additional constraints on their mobility.



Females from low income groups face the most difficult situation. According to the Bangladesh Bureau of Statistics, low income groups are defined as those who have income less than 5000 BDT (about 60 USD) per month (Bangladesh Bureau of Statistics, 2017). Even though pedestrian facilities and infrastructures are negligible in Dhaka, people in the lower income range predominately walk to meet all their mobility and accessibility needs (Shumi, et al., 2015; Nasrin, et al. 2012). Female garment workers, about 90 per cent of whom earn minimum wage (about 40 USD), have started to migrate to Dhaka where the majority of the factories are located (Shumi, et al., 2014). But the secure

mobility of these women - who are contributing productively to the city and country's economy - has not been ensured due to an inadequate research focus and inattention to this topic area. They experience a particular feeling of insecurity which can restrict their "Access to Opportunities" and eventually, undermine their "Right to the City" (Lefebvre, 1995).



Although middle income female commuters can afford to spend more on transport services than lower income groups, their main mode of transport is still the bus. However, inefficient bus systems, combined with the discriminatory and abusive attitudes of their male co-passengers and male bus drivers and helpers, make the in-bus journey experiences highly insecure and sometimes life-threatening for female passengers. In the last five years, there have been two widely publicised occurrences of gang rapes of women travelling by public transport at night (Daily Star 2017). On a day-to-day level, women are also harassed. The frustration is reflected by a female bus user stating "If you are a female passenger then you will face numerous problems and a female passenger means anyone can touch her in an inappropriate way" (Daily Star, 2015).

Female commuters who have the financial means to do so choose better and more expensive private modes of transport, which can give them a greater sense of security and comfort. High income female commuters can afford to own private vehicles. However, it is very rare to see female drivers on Dhaka's roads. Conservative society and the patriarchal culture in Dhaka does not usually allow female commuters to drive, cycle or ride their own motorbikes, although some of the NGOs present at the workshop are working hard on programmes to give women confidence to claim back the streets to walk and cycle (Day 1, Session 2 (Wider Picture), Presentation number 6).

It is undeniable that these important transport and mobility issues could be a major obstacle to the fulfilment of the SDGs for Bangladesh. Female commuter groups from different income ranges experience the worst effects of these problems, although often those on the lowest incomes are the hardest hit. However, very seldom have the mobility environments of female commuters been given attention by transport policymakers or the funders of new transport projects in Dhaka and other Bangladesh cities. Most of Bangladesh's transport budget is spent on constructing new infrastructures, such as bridges and roads for the minority of car users in the population. One recent exception is the new Bus Rapid Transit (BRT) project, which has identified female barriers to mobility, and, as such, it can be anticipated that in the final BRT policy they will be considered within the design of the project. However, BRT will provide services to only a very limited part of Dhaka, and will not serve the majority

of the city's local population. Therefore, the majority of low income groups will be left insecure in the urban mobility space.

All these issues signal an urgent need to focus on solutions to address the mobility needs and concerns of working women in Dhaka.

Aims of the Workshop

The primary aim of the workshop was to build bridges between academic researchers, practitioners and development workers, not just from transport, but from all related fields, including urban planning, health, community development, and environmental planning to address the challenges of ensuring safe and efficient transport for the working women. Specifically, the workshop aimed to:

- Draw attention to the mobility vulnerabilities and constraints specifically faced by low-income women and female commuters in different urban locations in Bangladesh through both lecture presentations and field study;
- Encourage participants to utilise novel quantitative research methods such as transport demand modelling, structural equation modelling, as well as the evidence from their own recent research studies;
- Encourage participants to include community co-investigation within a mixed-methods research methodology as a key route to building a stronger evidence base when working with vulnerable populations;
- Encourage participants to engage actively in field investigation of key mobility issues;
- Encourage debate among diverse actors (academic researchers, NGOs, government agencies, the private sector) regarding the mobility issues faced by children and young people in urban environments and thus encourage improved policy and practice; and
- Build networks and coalitions across the academic, policy and practitioner divide to address the mobility needs of vulnerable populations.

Summary of key findings and recommendations

Key issues

General transport issues:

- Overall lack of adequate, safe transport systems and physical infrastructures;
- Chaotic traffic organisation, with virtually no traffic management, regulation or enforcement of rules of road use;
- Budgetary focus on infrastructure serving only car using minority;

- Inadequate public transport systems, excessive travel times, overcrowding and unreliability of public transport;
- Lack of government oversight of private bus companies;
- Leading to heavy reliance on cycle rickshaws and motorised three-wheelers (mostly by middle income workers);
- No separate lanes for rickshaws, despite this working well in the past, but perceived as 'colonial' systems, adding to the traffic chaos;
- Road closures to allow passage of VIPs exacerbates congestion;
- Non-motorised transport banned from some areas;
- Lack of, and very poor-quality pedestrian facilities and walking environments;
- Lack of coordination among different institutions and organisations working in the transport sector;
- Walking and cycling do not feature within the city's Strategic Transport Plan;
- Corrupt police forces do not enforce regulations to improve the transport system;
- No connection between academic research and practice;
- Lack of evidence-based post evaluation of transport policies.

For working women:

- Middle income female workers take the bus, and sometimes use motor rickshaws;
- Muslim culture suggests that women are conservative and less vocal about their needs and rights further reducing focus on women's priorities;
- Conservative culture and social exclusion impacts on use of public transport by women;
- Male behaviours also impede opportunities for walking and cycling by women;
- Gender security issues when using public transit and walking;
- Men use female designated facilities;
- Removal of ground-level pedestrian crossings, replaced by bridges, which women are reluctant to use for safety reasons;
- Buses do not completely stop at bus stops, reducing access onto the vehicle, especially for women who are less forceful than men when boarding.

For female slum dwellers:

- Most low-income working women walk despite the dangerous conditions;
- The slums are not recognised within city planning, or their populations counted within surveys, and so the transport and accessibility needs of slum dwellers are not included within strategic or local plans;

- The slums are physically isolated from the city - there are physical barriers to their access and egress.

Lessons learnt

- Inadequate research focusing on low-income female workers generally, e.g. garment workers, and Dhaka's accessibility issues generally for men and women living in slums;
- Female commuters have been ignored by policy makers and funders of transport projects;
- Large transport projects do not reach poorer, slum dwelling populations;
- Funding and development initiatives do not extend to non-motorised transport;
- There is a lack of understanding of 'affordability' and 'accessibility' issues within the local context;
- Research and policies all focus on Dhaka and largely ignore other, smaller cities in Bangladesh;
- Top down planning is ineffective, e.g. in the case of the failed 'women only' bus services;
- There are some NGO-led initiatives to encourage women to reclaim the streets in their neighbourhoods, walk, cycle and undertake other outside the home leisure activities. These are very successful, but are largely unmonitored and their successes are under-reported.

Recommendations

For research:

- Research on transport needs of populations needs to include all cities in Bangladesh, not just Dhaka;
- Encourage more interdisciplinary research between transport engineers, planners and social scientists to break the technology and infrastructure culture of transport studies in Bangladesh;
- Encourage a culture of pre-post and evidence based analysis of transport projects and policies
- Investigate problems experienced by women using buses to inform the design of the planned BRT system to be more female inclusive;
- Encourage a local research culture refocused on greater public dissemination of academic study results, to increase policy impact;
- Undertake some basic audits of transport facilities and user surveys;
- Undertake some formal evaluations of existing NGO programmes for women's confidence building.

For capacity-building:

- Build mechanisms for academics to share their research with policymakers and NGOs – maybe via the INTALInC website, as a starting point.
- Develop education programmes focusing on issues affecting women directed at wider population;
- Broaden of these to develop NGO programmes for women’s confidence building to main road use roads.

For policy:

- Better bridging between academic research and practical planning and policy making;
- Consider the needs of the country as a whole, not just Dhaka, so that projects can be developed in places where there is a chance to prevent the problems experienced in the capital;
- Female friendly transport needs to accommodate entire network, including pavements;
- Propose fare subsidies for BRT should be extended across the entire transit network, i.e. on buses as well;
- Planners need to take ownership of transport issues relating to health, policing, education, mobility etc. and integrate local transport policy accordingly;
- Local regulations need to accommodate the needs of women (e.g. boarding buses before men);
- Make simple changes, e.g. prevent motorised vehicles from using narrow streets in Old Town, and coordinate road works by different departments.

Overview of the workshop activities

Day 1, 19th August 2017

Welcome and Introduction to INTALInC

Professor Jamilur Reza Choudbury (JRC) and Dr Sharmin Nasrin (SN), University of Asia Pacific; Professor Karen Lucas (KL), University of Leeds

Delegates were welcomed to the meeting. JRC stated a particular interest in the workshop as a result of his background in civil engineering. He gave a brief overview of the history and activities of UAP.

Transport is a major problem in Bangladesh, and Dhaka lies second from the bottom of the Centre for Economics Liveability table. Women in Dhaka face very specific problems in terms of mobility.

KL thanked JRC for his introduction, and UAP staff for organising the workshop. She gave an introduction to the work of INTALInC. The workshop offered an opportunity for attendees to make an impact through our work and collaborate as community of researchers, policy makers and practitioners. The issues being dealt with at the workshop were not just about transport systems but about lives. It was important to consider 'whole' solutions.

Keynote 1: Transformation of the transport landscape in Dhaka

Professor Jamilur Reza Choudbury, University of Asia Pacific



There has been a massive increase in Dhaka's area and population size over the last 40 years. JRC has lived in Dhaka in 1952; since then the city's population had grown from 300,000 inhabitants. Dhaka is surrounded by rivers and canals, and much of its area is made up of flood plains.

Rickshaws were first introduced to the city in 1939. Until the 1960s, women who travelled by rickshaw covered it in cloth so that they couldn't be seen by passers-by. There are now more than a million rickshaws in Dhaka and it is possible that around 2.5 million people depend on them for their livelihoods. In the mid-20th century, horses and carriages were used, especially to transport girls to school. Public buses were introduced in the 1940s, and more recently motorised rickshaws have become a common sight in the city. There has been a significant improvement in Dhaka's air quality since petrol was banned as a fuel for motorised rickshaws.

In the last 10 years, the average driving speed in Dhaka has reduced and it is anticipated that it will be four kilometres per hour by 2035. This has a significant impact on people's working hours and productivity.

A wealth of locally and internationally-funded research looking at Dhaka's transport situation is available. These studies extend beyond the city borders and have considered a number of options for improvement. A combination of BRT and MRT has been selected for development, as well as river projects, though some of these have failed. However, some recent projects developing water taxis have been successful and plans to extend the water transport network are in place.

In conclusion, transport development has failed to keep pace with Dhaka's growth and the city has become unliveable. There is a need for a comprehensive traffic management systems and RSTP, MRT and BRT are likely to make a significant improvement over the next 15 years or so.

Pedestrians face particular problems due to the quality and provision of walkways which force them to walk in the roads.

Keynote 1: Discussion

There is a general expectation that MRT and BRT megaprojects improve transport systems but evidence suggests that they lead to an increase in transport volume. Dhaka's population is predicted to rise to 250 million by 2050, while the city's area reduces as a result of environment changes, making the number of people living in Dhaka unsustainable. It is therefore important to plan for the entire country not just its capital city. A good commuting system is vital and improvements to secondary cities are essential in order to make them as attractive as Dhaka to working populations.

There are no plans to build separate traffic lanes and other facilities for rickshaws; although there were plans to implement similar systems around 60 years ago, these were abandoned and segregated rickshaw lanes were opened to other modes of transport.

Session 1: Issues and Challenges

1. Key transport issues for working women in Bangladesh: Mapping with the planned BRT

Dr Sharmin Nasrin, University of Asia Pacific

SN presented a video made by civil engineering students at UAP. The film provided a brief introduction to the transport system and its impact on working women in Dhaka. It examined issues relating to commuting and problems with public transport in the city, as well as solutions such as buses for exclusive use by women and prepaid ticketing systems; however, the measures currently in place are insufficient to help female commuters in Dhaka.

SN's presentation covered both quantitative and qualitative analysis, and modelling, of the transport needs of working women in Dhaka. Issues include overcrowding on public transport, the conditions inside buses and at bus stops, and the use of seats reserved for female passengers by men. There are also issues relating to reliability, cost, travel times, security and cramped conditions on public transport. Generally, there is little gender equality on the public transport system as a whole, and women passengers are more vulnerable than their male counterparts.

Modelling results demonstrate the vulnerability of women on public transport and were considered by the Greater Dhaka Urban Sustainable Transport Project gender action plan: at least 70 per cent of garment workers are eligible for subsidised travel and CCTV and two-door systems have been introduced on some buses. There are also plans to introduce gender friendly bus services with segregated queues and priority rides for women, an increase in female employees and female police at bus stops, lighting in underpasses, and gender equality training for employees. Penalties will be introduced for non-compliance.

2. Travel Behaviour for Women Public Bus Users in Dhaka, Bangladesh

Professor Shakil Akhter (SA) and Nawshin Tabassum (NT), Bangladesh University of Engineering Technology

The demand for public transport is growing with the size of the female workforce in Dhaka as women are generally more dependent on public transport than men. SA and NT conducted a study looking at three areas of Dhaka, and surveyed passengers using routes which covered much of the city. The large majority of bus users surveyed were students, with an average age of 27. Many women walked to bus stops and changes should be made to the system in order to accommodate this. Analysis

of the survey also looked at whether women tend to travel alone or in groups, the times of day they travelled and the cost of their journeys. There is a lack of facilities in place to accommodate the needs of female bus users: greater numbers of female designated seats and an increased provision of women only bus routes are necessary to facilitate female mobility in Dhaka.

Session 1: Discussion

There were questions around the impact of the BRT on women, and the presenters' future research plans in this area. SN had plans to look at facilitating BRT use by women: the problems are clear from modelling but it is important to investigate solutions.

SA noted that conditions on buses in Dhaka were unsatisfactory and compromised the safety of female passengers, however there are no real transport alternatives. Women-friendly transport should incorporate the entire public transport network, including pavements and street lighting. Currently travel subsidies, which currently only apply to one bus route, should be rolled out across the network and considered as part of wider public policy. If women feel safe using the network, then it is safe for all transport users, including men.

Research largely concentrates on Dhaka because of data and funding limitations in other areas.

Session 2: The Wider Picture

1. Traffic safety issues of vulnerable populations



**Professor Moazzem Hossain (MH) and Shahrion Pervaz (SP),
Bangladesh University of Engineering and Technology**

Gender and mobility is generally an important issue in developing countries but has been ignored by planners and policy makers. Low income females face specific obstacles using public transport.

There are some pre-existing studies of female transport users in Bangladesh which underline a range of issues, including religious and cultural limitations. Buses are the cheapest mode of transport in Dhaka but because of the cost of fares, and conditions in the buses and at bus stops, women are likely to walk, leaving them exposed to accidents. Low income groups are involved in 53 per cent of all road traffic accidents in Dhaka.

A hundred people were surveyed in Dhaka, including garment workers and other female commuters. The study examined transport preferences, the motivations behind these, (including comfort levels and cost), and how they impacted on journeys. The results indicated how important it was to implement initiatives designed to support female commuters.

2. Noise exposure from travelling on different bus routes

Dr Tanvir Ahmed (TA), Bangladesh University of Engineering and Technology

TA had conducted a study looking at the noise pollution experienced by passengers on mass transit routes, particularly buses in Dhaka. The impact of noise pollution is frequently discussed by medics and policy makers, and in the media, but little has been achieved in terms of improving the situation.



Roads are a significant contributor to noise pollution which has a serious effect on health and wellbeing. Evidence suggests that, as a result of their continued exposure to noise, those who work on buses are particularly vulnerable to health problems.

A noise survey was conducted on nine of the 58 bus routes in Dhaka City. Noise profiles, taking into account the length and speed of journeys and the condition of buses, were developed for each route. The results were then mapped, showing that areas of high noise pollution coincide with high population density and built up areas. Most bus services do not meet recognised standards for noise pollution levels, a concern for both passengers and staff. Women are particularly susceptible to the impacts of noise pollution due to the reversed position of designated seating near bus engines.

It is clear from the study that noise induced hearing loss is a problem for users of mass transit routes, and that there are several contributors to this which should be considered when devising solutions. TA would be conducting further work on this.

3. Road Safety Issues in Smaller Towns

Professor Jahir bin Alam (JbA), Shahjalal University of Science and Technology (Bangladesh)

JbA had conducted a study looking at road safety in Sylhet, a small but busy city in Bangladesh. His work showed that buses and mini-buses are involved in most road accidents, most of which were also pedestrian related. Working women are particularly vulnerable and make up a disproportionately large share of the number of women involved in accidents overall. The study had also looked at longer-term issues affecting people involved in road accidents and the impact of medical provision following the accident on their future wellbeing.

Accidents are often a result of road conditions, including the width of a road and obstacles such as bridges. Enforcement of regulations encouraging good driver behaviour was lacking. The number of motorised rickshaws on the roads also affected rates of road accidents.

JbA suggested that about 90 per cent of road accidents could be eliminated by enforcing speed limits and penalising drivers who do not obey regulations. Lowering the maximum speed of two-wheeled vehicles and making improvements to road maintenance and driver education would also support improved road safety conditions.

Session 2: Discussion

Buses are operated by private companies and government oversight of operators is lacking. In Dhaka statistics relating to road accidents remain constant – guidelines have been issued to try and decrease the number of accidents but little is done to implement regulations. A number of initiatives have attempted to improve the lives of female workers but, again, a lack of oversight means that in many cases these had proved unsuccessful. Women were encouraged to increase awareness of their mobility issues among the general public, as it was felt that if other passengers develop an

appreciation of the problems faced by female passengers, they would adjust their behaviour accordingly.

KL summarised sessions 1 and 2, stressing the urgency of taking measures to improve the range of issues faced by working women using the public transport network in Bangladesh. There are clear links between mobility issues and health, policing and education, and many problems are social and environmental; stretching beyond city centres and capital cities, they do not only relate to engineering. Transport planners are unwilling to take ownership of these problems.

Session 2: The Wider Picture, (continued)

4. Connecting the Informal City: Perspectives from a Dhaka Slum

Annamiek Prins (AP), University of Aberdeen (UK)

AP presented her study which included an examination of mobility issues and looked at how socio-economic standards affect the mode and speed by which people travel in urban spaces. She had spent six months conducting fieldwork in a Dhaka slum situated between higher income neighbourhoods. Many of the slum residents are rickshaw drivers and garment workers.

Much of the current discourse about women and transport focuses on the journey to work but it is important to consider more general, daily mobility as well.

Spaces inside and out of the slum have cultural significance: areas beyond the boundary of the slum are perceived as risky although it is interesting to see where these lie given a lack of rigid spatial distinctions. There are gender differences in making this distinction. Purdah is practiced in the slum: inside is seen as female space, whereas outside is a male domain. However, the outside does not necessarily begin at someone's front door, but where a communal compound meets a street. This is different, and more inclusive, than traditional perceptions of space.

Although women are visible on the street, it is not a female space. Garment workers prefer to return home after work while the men stand and socialise in the street. The age of a woman also makes a difference – older women do not mind going outside and some young brides do not go outside at all.

Decisions about transport need to take account of the impact of these cultural issues, and improvements should be made to infrastructure allowing women cannot access transport networks located away from their homes. It is not clear however, whether women are welcome on the streets, or whether low income populations are welcome in the city.

5. Urban Anchal Daycare: collecting quantitative and qualitative data from families to test the feasibility of a day-care model

Rumana Huque (RH), ARK Foundation (Bangladesh)

RH presented preliminary findings of research undertaken in cooperation with the University of Leeds.

There are four million slum dwellers in Bangladesh. Among them, many women work outside the home, although little formal childcare provision is available. This increases risks to children in terms of their general safety and wellbeing and also impacts on school attendance. The research asks whether working women are willing to send their children to a daycare centre, what their expectations of formal childcare provision are, and how much they would be willing to pay for it.



The project uses mixed methods, surveying 200 households in total and interviewing mothers and fathers of children under five years old. It is also looking at daycare centres already operating in urban areas, asking how they operate, and how accepting community leaders are of centres operating in their local area. Ultimately the project aims to develop and open a children's daycare centre and operate it sustainably for six months.

Research so far indicated that mothers perceive living conditions in the slum to be unconducive to early childhood development; children are frequently exposed to fighting, overcrowding, household accidents and bad language. Mothers work 12 hour shifts, six days per week and also take care of their children. Where informal childcare provision is arranged, it is unreliable. Mothers would like to see daycare centres which provide learning opportunities and caring environments in which to leave their children while they work. Many women state that they are not able to estimate the amount of money they would be willing to pay for this service without first consulting their husbands.

6. Walkability in Dhaka

Naima Akter (NA), Work for a Better Bangladesh

NA gave in an introduction to the organisation Work for a Better Bangladesh (WBB), which works on infrastructure issues, including transportation. WBB undertakes advocacy and research, networking, capacity building and media work. As part of their Liveable Cities programme, WBB is promoting fuel free transport.

Analysis of the transport plan for Dhaka shows that the government is focused on motorised transport and that investment in rail is not perceived to be as valuable as investment in roads. Pedestrian numbers are declining as zebra crossings and footpaths are removed and the number of cars has increased. Rickshaws have been banned in some areas and no new licences have been authorised since 1988. There were no significant initiatives supporting public transport.



WBB is collaborating with other groups to promote initiatives encouraging non-motorised transport. The organisation had developed guidelines for women reflecting issues discussed in earlier presentations.

Session 2, continued: Discussion

Although the Ark Foundation project was not entirely focused on the needs of working women, consideration would be given to how women will travel between their homes and daycare centres. There were successful examples of childcare facilities incorporated in garment factories, although the project was currently looking at developing them with slums. It was also important to consider fathers' potential contribution to childcare though difficult to comment in detail until the project reaches its conclusion.

AP noted that of the women she interviewed, some were happy to observe purdah, or had partners who wanted them to stay at home. Other women continued to work in garment factories after they are married. There is a ban on water transport although there had previously been a good boat service between the slum and the neighbourhood opposite, adjustments had been made to bus services, and rickshaws were banned from more affluent areas. Following the terrorist attack, which

took place in a prosperous neighbourhood, policies to decrease access to these neighbourhoods had been implemented, further isolating the slums to the detriment of the urban poor.

Refusal to maintain zebra crossings meant that they were disappearing. They were replaced by bridges, which fail to meet the needs of many pedestrians.

Day 2, 20th August 2017

Session 1: Feedback from fieldwork

Group 1: Motorised rickshaw rides

It was noted that the dimensions of the city centre were relatively small, and potentially walkable. In view of the obvious points of severe congestion at large junctions and other parts of the road, investment in footpaths was essential, to enable people to travel on foot.

There was some scepticism locally about improving pavements as it was felt that they would be used by street hawkers and motorcyclists. The level of corruption in the police force is such that regulating footpath use would be extremely difficult. Several approaches to improving pavements had been taken but enforcing regulations was problematic.



Researchers noted that there was no separate lane of traffic for use by rickshaws or other smaller vehicles. It was suggested that a separate lane would help ease congestion. In his presentation, JRC had talked about the separate lanes for rickshaws which were eventually been banned. This seemed to make little sense, as the roads appear wide enough to accommodate segregated lanes of traffic.

Because motorised rickshaws run on compressed natural gas (CNG), pollution levels were not as bad as researchers had anticipated. However, as traffic volume increases, any benefit as a result of CNG use would be lost.

Roads were often closed to allow vehicles carrying VIPs to move around the city more easily, for example roads around the parliament were currently closed and would remain so for much of that day. This served to worsen an already difficult situation.

Group 2: Bus stop



Researchers had discussed queuing arrangements at bus stops. There were generally two queues, separated by gender. Passengers at the bus stop had explained that a law allowing women to board buses before men would be helpful and acceptable to most people. However, local researchers noted that it may not be enforceable.

There were large traffic jams around the bus stop. Local delegates suggested that in the past it had been possible for travellers to plan their journeys in order to avoid serious traffic congestion. However, in recent years the volume of traffic had increased around the clock and Dhaka is now congested for around 18 hours each day. Construction projects also impede traffic flow.

It was noted that buses do not stop completely, making it extremely difficult for passengers to board them. Queues at the bus stop are very long and buses are overcrowded.

Other remarks

Cycling in Dhaka: Researchers had spoken to a local woman who cycles around 1.5 km on a daily basis. It was possible that outsiders have a distorted perception, and local residents have access to different types of transport. Road users, who encountered congestion as part of their daily lives, did not appear to have any problem with it.

Accessibility: There are electric cables running down the middle of pavements and no sloped access, making them inaccessible to wheelchair users. Dhaka does not have a pedestrian plan.

Session 2: Hearing from the Academics

1. Capturing Perceptions of Low Income Women About Para-transit: A structural equation modelling approach (SEM)

Professor Farzana Rahman (FR), University of Asia Pacific

FR had conducted research looking at paratransit modes which are used all over Bangladesh and are not always motorised. Specifically she had investigated the opinions of female tempo van users. Tempo vans which carry three passengers in the front seats and up to 14 in the back, and are generally used by the female workforce.

FR gave an overview of the study's targets, methods of data analysis and latent variables. Service levels are made up of quality, safety and security, reliability, and comfort. FR had developed a ranking of factors that contribute to the quality of transport.

Session 2.1: Discussion

It was suggested that results could be disseminated through professional organisations and operators encouraged to respond to the survey's findings, though it was unclear how receptive they would be in terms of making improvements. Research could be presented to policy makers, despite the difficulties of this in the local context. Survey results could be used to assist the work of campaign groups.

Variables in the study had been chosen based on discussions with policy makers, transport users and operators. The survey did not ask questions about gender-based harassment but it was possible that additional research could be undertaken to include this.

2. Transport Modelling Using Emerging Data Sources

Charisma Choudhury (CC), University of Leeds

CC spoke about her work using mobile phone data to model travel data. Traditionally transport modelling has relied on surveys but high costs mean that sample sizes are small, updates are infrequent, and results error prone. Technology allows researchers to obtain data from a variety of other sources, including mobile telephones, GPS, travel cards and CCTV cameras. Mobile phones are an excellent source of data in that they record locations whenever they are used to make a call.

Because low income populations do not have easy access to smart phones, CC's study used mobile phone data that was pre-stored for billing purposes. Limitations to her work included coarse spatial precision, a lack of background information about users, and biases – phone use was not

constant. There were also barriers to data acquisition. The study ran from 2011 to 2014 and collated data from around seven million users over a one month period.

Session 2.2: Discussion

Questions were raised about papers published on this methodology which discussed potential biases. However the initial models, while not perfect, are a starting point for research. CC is attempting to access mobile phone data to cross reference against GPS data for the same participants in order to prevent a continuation of the same problems.

It may be possible to conduct a pilot study using a smaller sample size, perhaps on the Leeds University campus, so that variables can be added. A Swedish NGO had conducted similar research relating to disaster management, however they were unwilling to share data.

It was asked whether the research could be adjusted according to specific cultural aspects. CC stated that it was important to consider whether data can be made to fit around the target group. It would then be possible to look at their accessibility points and how their mobility patterns compare with the general population or another subset. Many female slum-dwellers use their mobiles to speak to families abroad and their calling patterns differ as a consequence. However, the data could be useful when deciding on the location of, for example, children's daycare centres.

Keynote 2: Methodologies and Integrating Social Factors in Transport Planning

Professor Karen Lucas

KL presented work at Leeds University which takes a livelihoods approach to mobility: instead of first looking at transport, the research first sought to understand the needs of people who used it. Specifically the research had examined the needs of vulnerable and disadvantaged groups who do not generally participate in surveys and whose needs were not necessarily understood through other means. This type of work can only be undertaken through qualitative research.

There have been attempts to integrate transport policy into areas such as health and employment. Although economic development lies at the centre of transport policy, it was also necessary to think about environmental factors. Transport decisions needed to be considered in the round, taking into account the needs of different people, and considering related benefits and disbenefits. Transport policy should be fair – it is not right that low income groups do not have the same mobility options as higher income people. Planners, policy makers and researchers had a responsibility to think about how just their decisions are.

KL had developed a 'wish list' of five key considerations in transport planning:

1. Equal opportunities for mobility;
2. Fair allocation of mobility capital;
3. Reduction of the adverse effects of transportation. Transport users should not be exposed to pollution, accidents or transport related social exclusion;
4. User involvement in mobility planning and recourse to mobility justice;
5. Socially just transitions to low carbon mobilities.

There is a need for institutional capacity building before the transition to low carbon mobilities can be achieved.

Garment workers do not use public transport because they cannot afford the fares. It is important to understand what individuals really mean when they talk about affordability and distance. These terms mean different things to different people and need to be understood in individual contexts.



There appear to be several simple measures which could be taken to improve mobility in Dhaka, for example preventing motorised vehicles from using narrow streets. Dhaka will expand further in coming years and it would be better to plan for this growth rather than try to retrofit mobility solutions.

A paradox lies between Bangladesh and developed western countries where planners are now developing small scale, localised transport options which are discouraged in developing nations. The solutions provided in developing countries are only available to populations which are already transport rich, and those with the greatest need do not benefit from current policy.

Instead of assessing transport in terms of journey times, policy makers should consider livelihoods. Affordability is the starting point from which aspects such as accessibility by foot (and then public transport), integration with different locations, safety, health and transport governance should be considered.

Keynote 2: Discussion

Although policy makers are not always receptive to the ideas discussed in KL's presentation, we should be persistent in providing research to support mobility for livelihoods. It is possible to connect across disciplines and influence policy makers to align transport and social groups more effectively. It may be possible to work with decision makers such as local councils and mayors who would be willing to make improvements. Crises often result in popular movements aiming to resolve them, and in other cities changes have been made where transport has not formed part of political manifestos.

In the UK, people are encouraged to walk and cycle more, and other non-motorised modes of transport are being developed and introduced. These options exist in Dhaka but are largely undermined though developing cities will never accommodate the projected number of motorised vehicles, regardless of how many roads are built.

Feedback from break out session: Meeting the Mobility Needs of Working Women in Dhaka



Groups were asked to consider mobility issues in Dhaka, potential solutions, and the research gaps which need to be filled before they can be implemented.

Group 1

The group discussed how research influences decision makers in the local context. Research was available but a disconnect with policy makers was evident. There was an overemphasis on engineering ideas and a lack of interdisciplinary work. The broader research culture did not focus on impact.

The safety of female pedestrians is a serious issue. Lots of women walk in Dhaka, and walking would appear to be a good solution to local transport issues. However safety and security issues,

attitudes towards women, and pavements taken over by motorised vehicles impede this. The condition of pavements and crossings is also problematic.

In order to resolve these issues, a basic audit of facilities and user surveys should be completed. Comparative studies with other cities would be useful, for example there are similar issues in Lagos where intensive street lighting has been introduced as a possible solution.

The group also discussed local bus services. Boarding and exiting buses, and issues of overcrowding and lack of personal space are a particular difficulty for women. In order to combat these problems, more buses need to be introduced, possibly double-deckers although problems boarding and exiting them were acknowledged.

A bus quality survey and bus lane simulation had been undertaken, but there is no research focussing on female-specific needs. The failed trial of female-only buses was disappointing, and it was felt that this might be used an excuse by planners to take no further action.

Group 2

This group had also looked at bus services for women. Issues for male and female bus users are different but little gender differentiated data is available. Researchers should conduct a pilot study.



Secondly the group considered pedestrian crossing facilities and paths. Planners were doing nothing to improve these; it was possible that the car industry could encourage the development of these facilities and crash data was available which could be used to influence planners in this regard.

An additional problem lied in the top-down planning process. The failed gender segregated bus policy was an example of the problems this can cause – the service was not designed as fit for purpose for the passengers for whom it was intended.

The availability of data is paramount in influencing policy makers to make improvements to transport systems. Social and cultural attitudes towards female transport users can be addressed by sharing of experiences and media campaigns.

Group 3

Discussions were focussed on female pedestrians in Dhaka and similar cities. The group attempted to work beyond the paradigm of work to home. There were general problems faced by all pedestrians such as poor road design and conditions. However some issues, such as moves to replace pedestrian crossings with footbridges, are gender specific. Women do not feel comfortable using these facilities because they feel threatened by other groups who occupy them and there cases of women being exposed to sexual harassment on the bridges had been reported. Crossing facilities are therefore underused by women who, because of the lack of pedestrian crossings, are forced to cross the road through traffic and therefore made vulnerable to accidents.

Drivers do not make any allowances for pedestrians, and traditionally women have not used the streets to the same extent as their male counterparts; it is normally boys who leave the home to run errands or play. A lack of exposure to the streets is apparent in the way women use them – they may feel uncomfortable or not know how to deal with road users.

There were several potential solutions to these issues: infrastructure could be improved with the reintroduction of pedestrian crossings; better law enforcement making existing pedestrian

facilities useable; and increased levels of cooperation between government departments resulting in coordinated road works which would not affect other services.

The second paradigm the group considered lies in education; currently street safety awareness is not incorporated into the local curriculum. An educational model for developing confidence in women should be developed allowing them to feel comfortable using the streets. Women should be enabled to talk on street corners or walk around their neighbourhoods, increasing their confidence levels outside the home more generally. A small scale version of this solutions model had been implemented in areas of Dhaka where girls have decided to learn to swim or go cycling on their own. However, the results of these project are qualitative; there is a need for a formal research focus to obtain quantitative data.

A walkability resource programme should be formalised, evidenced with data, so that it can be rolled out across the city. Policy makers should be engaged in dialogue so that programmes can be introduced more widely and there were opportunities to collaborate with other agencies to facilitate this process. Finally, the group would like to build an exemplary neighbourhood project to present to policy makers.

Group 4

Discussions had centred around safety issues on the streets: infrastructure was a key element of this, and steps needed to be taken to improve the condition of pavements and ensure the safety of pedestrians using them at night. Cars were frequently parked on pavements and there is a lack of lighting and street furniture.

Lack of comfort is a key problem for public transport users. Low income populations should be asked how much they would be able to pay for transportation. Smaller neighbourhoods do not have any connections to the public transport network, and even though they lie in close proximity to the city centre, they are surrounded by water which decreases the mobility of residents. These areas should be connected to the wider transport network.

Concluding remarks

Professor Karen Lucas



The workshop had been attended by a network of people who are genuinely well positioned to make a difference to transport planning and policy. The group has access to communities who are involved in improving mobility, and students and researchers can contribute to their work by collecting information, looking at data processing, and undertaking and analysing qualitative research. There is also a large amount of existing research relating to issues pertinent to the agenda which had not been disseminated effectively.

Walkability is a new theme which could be developed and added to areas of research without interfering with other themes. The group can prepare an evidence-based action plan involving those who are willing to participate. Although funding may not available immediately, as the group grows and ideas develop, it is likely that this situation will be resolved. INTALInC members are gate keepers to other strands of work and can, and should, collaborate to assist and compliment each other's work, if not with funding opportunities, then with advice.

All of the workshop attendees were encouraged to visit www.intalinc.leeds.ac.uk and sign up for membership of the network.

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