Institute of Urbanism

HEINRICH BÖLL STIFTUNG

Volume 1

Mobility Patterns Amid Growing Urbanization

A Case Study of Islamabad

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Abbreviations

BRT	Bus Rapid Transit
CDA	Capital Development Authority
CNG	Compressed Natural Gas
DG	Director General
ED	Executive Director
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
GHGs	Greenhouse Gases
GIS	Geographic Information System
GTS	Government Transport Service
hbs	Heinrich Boell Stiftung
ICT	Islamabad Capital Territory
IoU	Institute of Urbanism
ITP	Islamabad Traffic Police
IWMB	Islamabad Wildlife Management Board
KCR	Karachi Circular Railway
MHNP	Margallah Hills National Park
MoCC	Ministry of Climate Change
MSU	Michigan State University
NEEDS	National Economic & Environmental Development Study
NIT	National Institute of Transport
NUST	National University of Science and Technology
PRIME	Policy Research Institute of Market Economy
SCEE	School of Civil & Environmental Engineering
SDPI	Sustainable Development Policy Institute
TIS	Traffic Impact Study
WWF	World Wide Fund for Nature - Pakistan

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Foreword

In 2008, human beings became urban specie as more people lived in urban areas than ever before. According to Blair Ruble, in coming years, an estimated number of 100,000 people will move to cities every day, and after 13 years, we will have a higher percentage of footprint of urbanization than ever before - currently, it is 40%. Urban areas have the potential to provide better opportunities for the population, however, what they offer depends on the management of available resources.

Rapid urbanization is creating multiple and unprecedented challenges to sustainable development. Urban areas alone are contributing 70% greenhouse gas (GHG) emissions globally. The natural resources are depleting fast. Issues of waste disposal, air and water pollution, energy security and mobility are exacerbated with ever increasing peri-urban areas and urban population in general.

In Pakistan, transport sector largely depends on low quality fossil fuels. It is only recently that the government has announced a shift to Euro-V standard petrol and a policy on electric vehicles is in the offing. Besides the quality and kind of fuel, the lack of inclusive and holistic planning has resulted in extreme traffic congestion, limited parking space, increased travel expense, and air pollution in the major cities. Increased road infrastructure to facilitate motorized vehicles is negatively impacting vegetation and open spaces in cities. It is, therefore, pertinent that transport system is revamped, and new policies are introduced that could curtail load on the fragile ecosystem.

We, at the Institute of Urbanism, aspire to make urban areas environment-friendly, and envision cities to be welfare hubs. In this regard, we require policy options and platforms that could bring together multitude of stakeholders to generate a collective impact. Policy platforms should be co-creation spaces that bring policy makers and businesses closer to the ordinary citizens, and enable city dwellers, especially the youth and women to reflect their needs and aspirations.

'Reshaping Urban Mobility in Islamabad' is an initiative of the Institute of Urbanism that aims to generate a discourse on sustainable urban mobility at community and policy level. In the first phase, a series of dialogues has been conducted with important stakeholders of Islamabad city. These dialogues were helpful in understanding urban mobility landscape in Islamabad. This report is a compilation of the analysis and recommendations by the participants.

Mome Saleem
Founding Executive Director

Introduction

With around 55 per cent of the global population currently residing in urban areas, a proportion which is expected to rise to 68 per cent by 2050, the world is increasingly becoming urban in nature (United Nations, 2018). In the urbanized world of today, mobility not only plays an important role in the social, economic and political lives of the urban population but is also creating challenges for sustainable growth. Urban mobility, which can be defined as the whole of trips generated daily by the inhabitants of a city (Aguilar & Mendes, 2017), is linked to specific urban activities and land use, with each type of movement involving generation, modes, routes used and destination for trips depending on factors such as recurrence, income, urban form, density, level of development, and technology (Rodrigue, 2020). An uncontrolled growth in the urban population has given rise to mobility patterns that are contributing towards environmental degradation. According to estimates, the transport sector is the second biggest contributor of GHG emissions and is thus contributing to climate change (Sutter, 2015).

Climate crisis, a phenomenon that may be described as a mix of global warming and climate change, has emerged as a serious threat to the global security and population since the early 1990s. Since then, it has been exacerbating the existing socio-economic vulnerabilities of human settlements. Depletion of natural resources and recurrent disasters such as floods, droughts, and heat waves across the world are some of the negative impacts being experienced by populations. During the period from 1995-2006, the world had experienced the warmest years of history dating back to 1850 (Dervis n.d.). With regard to the negative impacts and solutions, the design and functioning of urban areas place cities in a unique position. It is estimated that cities globally are facing the adverse impacts of climate change. Moreover, cities are the largest contributors to GHG emissions and hence potential agents of change (United Nations, 2019). This calls for a shift in the urban design and planning, including land-use and zoning, transportation, green space, and energy policy.

The disproportion between the built-up area and green cover/open spaces is creating heat island impact[1] in the cities, thus increasing susceptibility of cities to the climate crisis as has been witnessed in Karachi and other parts of Pakistan in the last few years (UN Habitat, 2018). These impacts are more pronounced due to a lack of urban planning. According to the Global Climate Long-term Risk Index, for the last decade, Pakistan has been among the top 10 most vulnerable countries to the

1 Heat island impact refers to the phenomenon when urban areas experience higher temperature as compared to other outlying areas. This occurs when concrete structures within the urban areas including buildings, roads etc. absorb and resultantly radiate more heat than natural landscapes.

impacts of climate change (Eckstein et al., 2020). It is also the fastest urbanizing country in South Asia with the rate of 3% per annum. Currently, one third of the country's population lives in cities, therefore, there is a dire need to rethink and redesign the structure of cities.

To this end, IoU with the support of hbs initiated a project a titled 'Reshaping Urban Mobility in Islamabad' with the aim to generate discourse around the challenges of urban mobility, identify its environmental impact, and advocate for socially and environmentally sustainable mobility patterns. For this purpose, a series of dialogues was organized. The dialogues comprised of various activities/ formats, including experts' talks, night's owl session, panel discussion and situation room (Figure 1). These activities (Annexure A) were designed to help identify potential members for a technical working group from among the participants, who can provide guidance during research phase of the project. The dialogues were attended by journalists, citizens of twin cities[2] and policy makers (Annexure B). The findings from the dialogues have been used for designing a research to understand the local transportation needs and behaviors, and suggest ways to improve the transport sector in Islamabad. This compilation maps various pressing issues that require an in-depth analysis and policy intervention.

A Brief Overview of Islamabad – A Planned City

Built in the 1960s, Islamabad has a unique urban structure planned on the principles of 'Ekistics Grid' with a uniform land-use within square shaped sectors, and the idea of mono-directional expansion of the city known as dyna-polis (Daechsel, 2015). Each sector was planned to have smaller units called sub-sectors, which fulfil the residents' everyday needs (i.e. schools, mosques, markets, playgrounds, etc.). This emphasized the idea of eco-friendly

Figure 1: Roadmap of Dialogue Series

2 The cities of Rawalpindi and Islamabad are jointly known as twin cities on account of proximity and the strong social and economic links between the cities

mobility. The premise of dyna-polis aimed to organize communities in a way that doesn't waste resources on what Doixiadis, the architect who prepared the master-plan of the city, called 'redundant roads'. The master-plan ensured a balance of green and grey coverage in a sector that is as follows:

Spaces coverage	Percentage
Residential	55.00
Central Functions (community buildings, commercial, parks/playgrounds)	21.30
Roads	23.70

Source: Dox-PA90, Communities and Housing, 30th October 1960, para 328, pg. 131

At the time it was prepared, the master-plan matched the demography and dynamics of development. However, rapid urbanization together with lack of a formal urban transport system that is managed in accordance with modern urban transport practices has created mobility issues in the city.

The deregulation of the public transport sector in the 1980s, along with horizontal spread of the city, has generated excessive auto-based travel demand which has thus created the issue of extreme traffic congestion. To address the issue of congestion, instead of focusing on provision of public transport, successive governments have relied on expansion of roads and/or construction of underpasses, flyovers and interchanges. However, evidence suggests that wider roads lead to an equivalent rise in usage, thereby having little impact on traffic jams and mobility while increasing the urban carbon footprint and deteriorating the air quality (Turner, 2010). The culture of single occupancy cars also limits parking space which results into further encroachment on green areas, parks, grounds etc. The current mobility patterns and policies have, therefore, resulted in a situation where the city is facing issues of high air pollution, deforestation and shrinking of green areas, and land degradation (Gilani et al., 2020). Moreover, car-centric solutions reduce the accessibility, safety and mobility of pedestrians and non-motorized commuters by encouraging fast-moving vehicles on roads. The need of the hour, therefore, is to design a transportation plan that is environmentally friendly and socially inclusive.

Dialogue 1
Unbundling the Concept of Urban Mobility for Developing Countries - The Case of Pakistan

The focus of the first dialogue was to share the concept of urban mobility beyond vehicular mobility and explore the cultural, social, environmental, and economic aspects of mobility which ultimately define the character of a place. The first half of the dialogue was dedicated to experts' presentation and participatory discussions on the concept of urban mobility, while the second half consisted of a Night's Owl Session to discuss mobility patterns over the years in major cities of Pakistan, including Islamabad, Peshawar and Karachi.[3]

Session: The Concept of Mobility

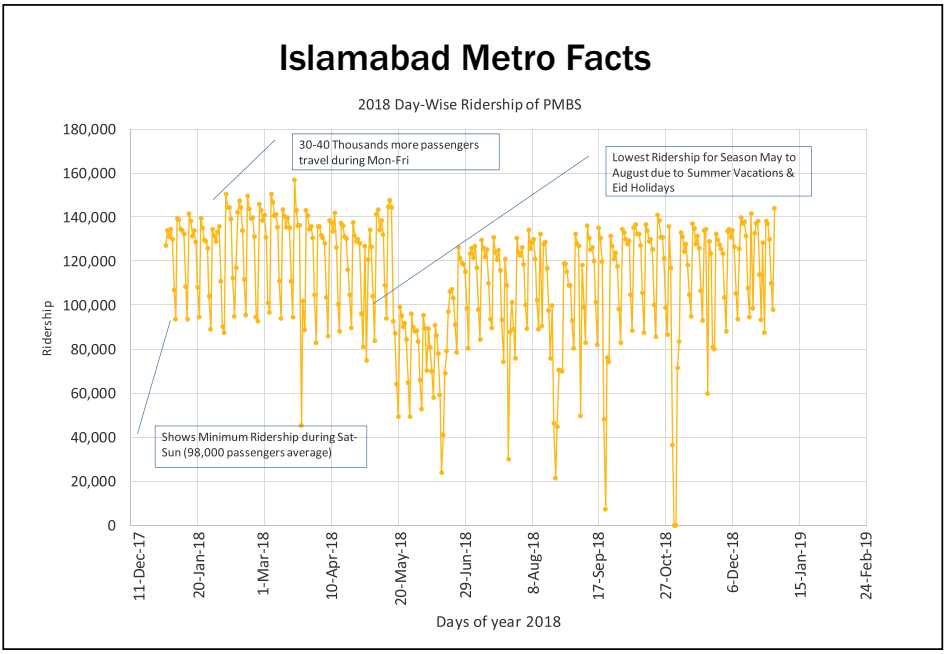
a. The Concept of Mobility beyond Transportation[4]

Urban mobility can be defined as the frequent movement of people and goods on streets and highways usually over the same routes covering relatively shorter distances. This movement should be safe and efficient. Owing to a steep rise in Islamabad's population, a change in lifestyle due to increase in income, car-leasing opportunities, and a lack of proper public transport facilities, the preference for private vehicles has increased. This has contributed to the issues of road-congestion, lack of parking spaces, and lack of ease of mobility and safety especially for non-motorized commuters. The increase in urban growth and traffic has a profound impact on environment as well. Yet, in Pakistan, Environmental Impact Assessment (EIA) report and Traffic Impact Study (TIS) of infrastructure development projects are given less importance at planning stage. In recent years, there have been certain positive developments with regards to urban mobility in Pakistan due to technological innovations. These include e-mobility, e-shopping, and e-banking. These facilities can play a vital role in reducing the need for owning a private vehicle, which in turn, would result in reducing the number of trips made to the shops/banks, etc. Similarly, the introduction of mass transit such as Metro Bus Service that runs through the twin cities has also resulted in a greater reliance on public transport facilities (Figure 2), and has eased the congestion on major routes

3 The expert from Lahore was unable to attend the session due to last minute change in his schedule.

4 Presented by Dr. Kamran Ahmad, who is serving as an Assistant Professor in National Institute of Transportation (NIT), School of Civil & Environmental Engineering (SCEE), National University of Science and Technology (NUST). Dr. Kamran did his PhD in Transportation Engineering from Michigan State University (MSU). He has also worked as a Traffic Engineer with PARSONS Transportation Group, USA for three years.

Figure 2: Daily Ridership of Metro Bus Service



Source: Presentation by Dr. Kamran Ahmad dated 23rd November, 2019

such as Murree Road, Rawalpindi. Feeder routes for Metro Bus Service, however, should be introduced to make it more accessible for a larger proportion of population

To ease congestion on roads, there is a dire need for better management of traffic flow. High-occupancy lanes, car-sharing and flexible work timings can contribute to alleviating the issue. Attention should also be given to improving non-motorized mobility by introducing bicycle lanes and pedestrian zones. These steps will not only improve mobility, but will also ease the pressure on environment.

b. Urban Mobility in Developing Countries – The Missing Links[5]

Like other developing countries, urban growth in Pakistan is mostly occurring in a haphazard manner, and typically lacks appropriate planning strategies. Urban sprawl in Islamabad is causing loss of prime of agricultural land and tree cover which is increasing the adverse ecological impact on human health as well as on flora and fauna. From 1976 to 2016, the tree-cover greater than 40% canopy has decreased from 182.87 km^2 to 132.27 km^2 whereas the tree-cover

5 Presented by Dr. Ejaz Ahmad, Director Ecological. Dr. Ejaz has also worked with World Wide Fund for Nature (WWF) - Pakistan as a Senior Director. In the past he has also served as a member of the Advisory Committee of Ministry of Climate Change and a member of Board of Directors for Fund for Protected Areas. Presently he is a Life Fellow of the Zoological Society of Pakistan and a member of Board of Directors for Mountain Areas Conservation Fund.

Figure 3: Change in Land Use over the Decades

Land Cover 1976, 1990,2000,2010 and 2016 (area in sq. km and percentage assesment based on satellite images).

Land cover class	1976 km2 (%)	1990 km2 (%)	2000 km2 (%)	2010 km2 (%)	2016 km2 (%)
Tree cover > 40% canopy	182.87 (20.18)	192.19 (21.21)	178.56 (19.70)	140.76 (15.53)	132.27 (10.86)
Tree cover < 40% canopy	417.03 (46.02)	342.94 (37.85)	399.31 (44.07)	360.79 (39.82)	306.53 (35.72)
Settlement	29.99 (3.31)	44.51 (4.91)	59.73 (6.60)	143.82 (15.87)	170.40 (18.80)
Soil	270.27 (29.83)	317.91 (35.08)	257.00 (28.37)	254.34 (28.02)	289.45 (33.82)
Water Body	5.86 (0.65)	8.44 (0.94)	10.51 (1.16)	6.29 (0.69)	6.51 (0.76)
Total	906 (100)				

Land Cover annual rate of change (1976-1990, 1990-2000, 2010-2016 and 1976-2016)

Land cover class	1976-1990	1990-2000	2000-2010	2010-2016	1976-2016
	(% change per year)				
Tree cover > 40%	0.36	-0.74	-2.38	-1.04	-0.81
Tree cover < 40%	-1.40	1.52	-1.01	-2.72	-0.77
Settlements	2.82	2.94	8.79	2.83	4.34
Soil	1.16	-2.09	-0.14	2.16	0.17
Water Body	2.61	2.19	-5.13	1.59	0.42

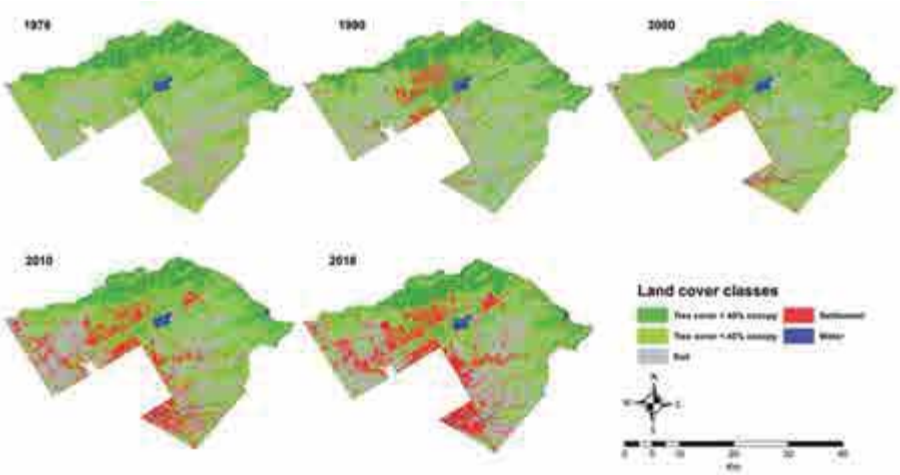
Source: Presentation by Dr. Kamran Ahmad dated 23rd November, 2019

less than 40% canopy has decreased from 417.03 km^2 to 306.53 km^2 in Islamabad. On the other hand, the settlement area has increased from 29.99 km^2 to 170.40 km^2 (Figure 3).[6]

Similarly, land-use changes have also occurred in Margallah Hills National Park (MHNP) where vegetation has decreased (Figure 4).

6 Data presented by Dr. Ejaz for this presentation was based on the study: Gilani, H, Ahmad, S, Qazi, WA, Abubakar, SM and Khalid, M. 2020, Monitoring of Urban Landscape Ecology Dynamics of Islamabad Capital Territory (ICT), Pakistan Over Four Decades (1976–2016), Land, vol, 9, no. 4.

Figure 4: Change in Land-use in MHNP over the Decades



Source: Presentation by Dr. Ejaz Ahmad dated 23rd November, 2019

The solution for reducing urban sprawl and conserving the ecological balance of the city could lie in making growth vertical. However, vertical growth has its own lacunas and ultimately does more harm than good if it does not properly cater to factors such as population density, traffic congestion, solid waste management, and water management.

c. Urbanization and Transportation in Pakistan[7]

Pakistan has the highest rate of urbanization in the region, i.e. 3%. Moreover, it is happening in an unplanned manner since there exists no formal urban policy. The horizontal growth of cities remains unchecked, while there is a mushroom growth of housing societies on the outskirts of major metropolitan cities, including Islamabad. This makes it practically impossible to create a workable public transport system on the one hand, while on the other, lack of downtown areas within walkable distances creates a significant demand for travel. Use of private vehicles and taxis has, therefore, become the dominant mode of transport within Islamabad making the cost of transport high in Islamabad and Rawalpindi – the twin cities.

The development mindset in Pakistan is very road-centric where expanding road infrastructure is considered as a major factor towards improving mobility in the city. However, expansion of roads and high-speed expressways negatively impact non-motorized

7 Presented by Ms. Aniqa Arshad, who is a graduate of the Institute of Business Administration, Karachi. With a degree in Economics and Mathematics, she has been actively engaged with policy research and advocacy since 2017. Her expertise lies in local economic development, third tier governments and urban competitiveness. She is currently associated with the Policy Research Institute of Market Economy (PRIME) Institute.

forms of mobility such as walking and cycling, and increase road safety concerns. To promote the use of public transport in Islamabad, Metro Bus Service has been introduced. However, absence of feeder routes makes it inefficient to use the service for travelling to different locations within the city. Moreover, its associated infrastructure severely restricts the accessibility of non-motorized commuters to adjacent areas due to lack of consideration given to building proper crossovers.

The private sector in Pakistan has recently stepped in through introduction of cab-hailing services etc. to alleviate mobility issues in the city. The government should thus facilitate the private sector and make Public Private Partnerships to improve overall mobility in the city.

d. Urban Mobility and Threats to Margallah Hills National Park[8]

Commercial activities such as construction and expansion of Monal, and other hotels and restaurants (Figure 5) have increased vehicular flow in the MHNP. The resulting air, noise and light pollution have disturbed the local wildlife, harming the habitat of the wildlife in the MHNP. In order to mitigate the risks posed by vehicles to MHNP, an entrance fee should be charged, the proceeds of which should be utilized to make efforts to conserve the ecological balance of MHNP. Moreover, a shuttle service should be introduced from Islamabad Zoo to Daman-e-Koh and Monal area to reduce the traffic load.

Figure 5: Change in Land-use in MHNP due to Construction of Monal and other Restaurants

Source: Presentation by Dr. Anis-ur-Rehman dated 23rd November, 2019

8 Presented by Dr. Anis ur Rehman, who is the head of IWMB which looks after the MNHP and other wildlife concerns in the capital.

e. Carbon Emission and Transportation Sector of Pakistan – National Economic & Environmental Development Study (NEEDS)[9]

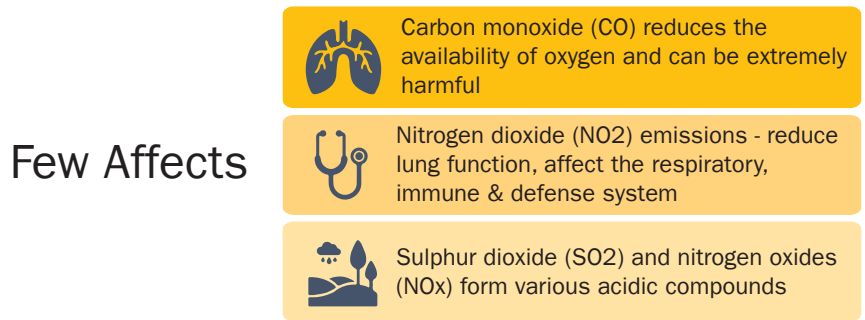
Pakistan is experiencing a rapid increase in urban population. A speedy urbanization is accompanied by a growth in the transport sector, especially in terms of number of vehicles on the roads. While the expansion of the sector improves population's access to amenities such as education, healthcare, employment, recreation, etc., the sector has several negative externalities such as emission of harmful gases and substances including lead, carbon-monoxide, carbon-dioxide, methane, nitrogen oxide, nitrous oxide, chlorofluorocarbons, particulate-matters and heavy metals, which damage the ecological balance of the cities and health of the dwellers (Figure 6).

According to the NEEDS study, carried out in 2010, the transport sector accounts for 21% of national emissions. To make the sector socially and environmentally sustainable, transport projects should have proper land-use and transport interaction modelling, strategic modelling, scenario modelling, and operational design.

Session: Night's Owl Session – Stories of Transportation from Pakistan

The speakers used the art of storytelling to engage the audience by narrating stories of change around mobility in the major cities of Pakistan, including Islamabad, Peshawar, and Karachi. The history of how mobility dynamics have changed in Islamabad since it was established in the 1960s were explained by Dr. Ejaz Ahmad.[10] Mr. Muhammad Israr[11] shed light on challenges and

Figure 6: Impact of Transportation Sector on Health



Source: Presentation by Mr. Shakeel Ramay dated 23rd November, 2019

9 Presented by Mr. Shakeel Ramay, who is the Executive Director of Zalmi Foundation

10 ibid.

11 Mr. Israr ul Haq is a public sector management professional with over 18 years of experience in areas of urban planning, infrastructure development, governance, fiscal administration, public policy, monitoring and evaluation and logistics. He has served as DG BRT.

achievements of Peshawar BRT System, while Mr. Malik Zaheer-ul-Islam[12] talked about the transport projects and issues of mobility in Karachi.

a. The Government Transport Service of Islamabad

Islamabad initially had a very small proportion of population that resided in the city. There were only a few private houses along Embassy Road. There was no settlement beyond Zero Point, and a majority of people commuted from the surrounding areas on a daily basis. At that time, the commuting needs of students and government officials were mostly met by bicycles or Government Transport Service (GTS) buses – single and double-decker – which were extremely punctual and covered most of the desired routes within the city. They even had intercity services. Moreover, the service had subsidized tickets for students. However, over time the mobility dynamics began to change as the settled population in the city increased, and the concept of having access to basic services such as schools, dispensaries, etc. within a walkable distance started changing, while the quality of public transport began to decline simultaneously due to compromised merit and institutional decay. This created an opportunity for private service providers – especially migrants from Afghanistan – to use this as a means to generate income by operating vehicles to bridge the gap between supply and demand of transport facilities. After deregulation of the sector, public transport facilities completely shrank, and private operators dominated the sector till the launch of Metro Bus Service in 2015. However, Metro mostly caters to the commuting needs of people travelling from Rawalpindi to Islamabad while ignoring the large section of the population which resides within the city. This is evident from the fact that its stations are not accessible within a walkable distance to a major proportion of the population residing in 'G' residential sectors, which are the most populous sectors of the city. In fact, an alternative infrastructural setup had already existed for the route covered by Metro Bus in the form of railway


Participants listening to stories on changes in city mobility patterns at the Night's Owl Session

12 Mr. Malik Zaheer ul Islam is an Urban Transport Expert. He is considered to be a pioneer of traffic engineering in Pakistan. He has managed various projects funded by World Bank, Asian Development Bank and other international donor agencies for improvement of traffic and transportation, especially BRT concept planning and feasibility in metropolis of Karachi.

tracks, however, it was not utilized. Owing to the lack of a proper public transport system, which caters to the commuting needs of a majority of population, private vehicular flow has increased immensely in the city. According to studies, around 60,000 to 70,000 people travel through Faizabad, a central point between the twin cities every day (CDA, 2012). This translates into a huge carbon footprint. Moreover, due to lack of proper parking spaces in the city, green spaces are being encroached upon. Mauve Area has experienced a significant degradation due to encroachment as most of the people working in offices in the area use green spaces for parking.

b. Transport in the Walled City of Peshawar

Developed along the Great Trunk Road, Peshawar was a walled city till 1950, where the dominant mode of mobility was walking. Donkey carts also remained in use as a transportation means till the 1960s. Due to its geographical location, Peshawar has been a hub for trade – not only for the country but also for traders coming from Afghanistan. The need for mobility has, therefore, always been great. This has provided local population an opportunity to use this as a means to generate income by getting themselves associated with the transport industry, especially since people in the area prefer being engaged in business ventures as opposed to being employed in jobs.

The mushrooming of the sector, however, has led to a severe problem of traffic congestion in the city. Currently, according to a rough estimate, there are about 88,000 rickshaws in Peshawar. To resolve the issue of congestion, while keeping in mind the high population density in the city, the government decided to introduce BRT in the city. The BRT system being put in place is third generation, i.e. it is smart and will make use of automation for several of its operations. It will not only run along a fixed track as the Metro Bus Service does in Islamabad but will also cover other routes according to the needs of the passengers.

With a total of 220 diesel-electric hybrid buses, the BRT covers 68km and has seven feeder routes with color-coded buses that will provide public access to main areas within the city. Each bus has a capacity of accommodating almost 130 passengers and will replace a total of 34 vehicles at one time, thus reducing the carbon footprint of transport sector in the city. Moreover, the provision of park and ride facility at three out of 32 BRT stations, bicycles and exclusive bicycle lanes along the corridor, and special facilities for physically-challenged will improve mobility in the city. It will also reduce the over-all travel time.

To mitigate the environmental risks, which resulted due to cutting of 729 trees for BRT's infrastructure, thousands of more trees were planted in the city. Moreover, to compensate for the shrinking of road infrastructure, underpasses and overhead bridges have been constructed so that flow of vehicular mobility remains unaffected. To ensure that the drivers

of local transport do not lose their source of income, the government has reserved seats for them in the project which they'll get after passing a simple driving test. The BRT project, therefore, is not only environment-friendly but is also pro-poor.

c. The Tram Days of Karachi

Karachi had a mass transit system in the form of tramway network before independence. It had 1500 tram cars and covered a distance of 37km. Along with Kemari Port, Karachi Zoo, Saddar area and Cantt Station, it used to cover some of the major routes in the city (Image 1). A transport master plan was made in 1974, which proposed the up-gradation of the system, however, the private bus owners developed a route against it which ultimately led to its abandonment in 1977. This was a misstep since in other places around the world, including Melbourne and Athens, similar tram systems were upgraded. However, in Karachi instead of maintaining this asset, it was laid to waste.

In addition to natural population growth, Karachi port has always acted as a major economic pull factor for in-migration from all around the country. To cater to the mobility needs of citizens, a master plan was designed in 1951 by a Swedish company which after identifying high and low-density areas proposed the establishment of Karachi Circular Railway (KCR). The plan for KCR was well-designed, as it catered to the mobility needs of the city. Once the KCR infrastructure was laid, the government realized that Karachi port was the only port in the country at the time, and if the road infrastructure is ever destroyed the route to the port would be disrupted. So, they designed KCR to be a goods train as

Image 1: Karachi Tram Service in 1950s

Source: Isa Daudpota Collection (https://www.thefridaytimes.com/tramway-to-bohri-bazaar-karachi-circa-1950/)

well which started from the Drig Road to City Station and had 16 stations in between and ran for 30 km. The main track, used for passengers ran for 14km from Landhi, so overall, it covered 44km. During 1965–1966, it used to carry around 500,000 to 600,000 commuters every month. Unfortunately, the system was being operated by the Ministry of Railways that didn't pay much attention to urban development. When the KCR wasn't expanded to keep pace with the growing size of Karachi, it stopped being as responsive to the commuting needs of people as before since the rigid rail-system didn't cover the newly-formed hubs of economic activity. So, minibuses, which were comparatively more flexible by virtue of being road-based, and cheaper to acquire and operate for private service providers, were introduced. Since Karachi has a free transport policy, i.e. anyone can provide such services, the sector began to expand while KCR continued to suffer financial leakages, and thus had to cease operations in 1999.

In 1984, the World Bank chalked out a plan to streamline traffic in Karachi. Under this plan, four projects were launched, which brought some improvement, but these projects lacked sustainability in the sense that they did not have proper maintenance strategy. The mass transit project that was proposed could not be completed and the company which had been awarded the project demanded that the government pay damages. The project of Compressed Natural Gas (CNG) buses was launched, however, it did not succeed because the government failed to fulfil its commitments. Except a few bus owners, others wrapped up their business, leaving only a handful of buses to operate. It was then proposed that Karachi should have a BRT system. The study for the BRT project has been completed and the design has been proposed after incorporating the learnings from other BRT projects in Pakistan. In Karachi, CNG and bio-fuel powered buses will operate on BRT routes.

Public transport projects have not succeeded in Karachi despite the fact that 24 million trips are generated every-day where 45% are non-mechanized and 55% are mechanized. The issue is that vehicles are not well maintained and the traffic isn't well-managed.

Participants of the first dialogue pose for a group photograph

Dialogue 2
Traffic Issues and Planning in Islamabad

The focus of the second dialogue was to analyze the transportation sector in Islamabad in the light of traffic issues, parameters for planning, environmental impact of the sector, and the role data and coordination among different institutions can play in making the sector more sustainable. The second dialogue consisted of two sessions:

i. **Interactive panel discussion**

ii. **Inputs from participants**

Participants pose for a group photograph during the Second Dialogue, Mr. Azam Lodhi – Director Traffic Engineering and Transportation Planning CDA, Ms. Farzana Altaf – DG EPA and Ms. Mome Saleem – founding ED IoU, stand in the first row

Session: Panel Discussion

The panel consisted of Ms. Farzana Altaf Shah – DG, EPA; Mr. Azam Lodhi – Director Traffic Engineering and Transportation Planning, CDA, and Mr. Jawed Ali Shah – Habitat Programme Manager, UN-Habitat.[13] The panel was moderated by Ms. Mome Saleem – Founding ED, IoU. The following paragraphs present a summary of the inputs from the speakers.

Designed by an illustrious Greek town planner, Islamabad has a unique urban structure with uniform sectors. Each sector was planned to have a downtown area called the Markaz (centre), which was supposed to cater to the everyday needs of the residents at a walking distance. It was also designed to accommodate motor vehicles which is why several major road and service roads were built in the city. However, the city

13 Written inputs were received, however, Jawed Ali Shah couldn't join in person.

began to face traffic issues in the 1980s, after the deregulation of public transport sector which also saw a discontinuation of the double-decker and GTS buses. Since then, the successive governments had paid no attention to mass transit.

The recently introduced Metro Bus Service is a good initiative to cater to the unmet needs for public transport in the city. It might seem financially non-viable, however, it is environmentally sustainable as it results in a lower rate of GHG emissions. Yet, there is a need to upgrade the design and infrastructure by introducing feeder routes and shuttle services to not only accommodate the increasing number of commuters, but to also cater to the travelling needs within the city.

As far as the environmental impact of the transport sector is concerned, the panel highlighted that it is a neglected subject. Islamabad has experienced a decline in the ambient air quality due to air pollution caused by the sector. However, the absence of an overarching ministry dealing with the planned urban growth, together with lack of coordination between different government departments, makes the implementation of environment-friendly laws vis-a-vis the transport sector very difficult. This has resulted in several violations of EIAs when it comes to land-use and encroachment of green spaces for parking, etc. However, some of the positive steps being taken include preparation of Islamabad Urban Forestry Policy, installation of new air quality monitoring stations at various points and preparation of EIAs for new sectors.

The recommendations given by the panel to make the transport sector eco-friendly included:

- Introduction of an integrated mass transport system that takes into consideration the pattern of movement of population for work, education, trade and commerce etc. from Rawalpindi, Rawat, Wah Cantt etc.
- Increasing ridership and usage of public transport by improving people's access to it and introducing shuttle services to access Metro Bus
- Introduction of pedestrian walkways, speed limits, speed breakers and clear traffic signposts
- Better traffic management
- Formalization of ride sharing in offices where organizations give incentives to employees for carpooling. For this purpose, digital platforms should be introduced. Female inclusive ride sharing facilities should also be launched
- Introduction of an effective vehicular emission testing and vehicle worthiness testing road certification programme
- Introduction of a city railway system in Islamabad

Ms. Mome Saleem (center left) – founding ED IoU presenting a souvenir to Ms. Farzana Altaf (left) - DG EPA and Dr. Ejaz Ahmad (right) – Director Ecological & Former Director WWF presenting a souvenir to Mr. Azam Lodhi (center right) - Director Traffic Engineering and Transportation Planning CDA at the end of the second dialogue as a token of thanks

Session: Input from Participants

The last session of the dialogue consisted of an activity where feedback was taken from each participant to collate key take-away, the next steps, and topics for research.

a. Key Takeaway

– Increase in population is a major cause of deteriorating urban mobility as cities are expanding at an unchecked pace, which is creating serious pressure on city administrations, and is exacerbating the climate change risks

– Urban mobility is largely a misunderstood and misinterpreted concept. Therefore, there is a need to sensitize people through mass awareness campaigns about what it is and the lacunas it faces by engaging all the stakeholders

– For sustainable urban growth, an Urban Development Policy should be devised, which takes into account the need for making mobility environment-friendly

– The transport sector can be a game changer for environmental conservation and urban development if changes such as introduction of bicycle lanes and expansion of public transport are made

– It is important to take EIAs and TIS more seriously

b. Next Steps

– Assess the impact of mobility and the externalities that are generated

– Build capacity of, and improve coordination between the concerned government departments to improve mobility

– Engage stakeholders, including the government and decision-makers to produce knowledge documents on the subject-matter,

and propose a sustainable urban mobility plan, which includes an integrated transit system, and provision of pedestrian and bicycle zones

- Introduce courses on sustainable urban mobility at university level and incentivize students to take them up by giving micro-scholarships for innovative solutions and rehabilitation
- Identify and map green spaces that are encroached and damaged by the transport sector
- Support and promote private sector initiatives such as car-pooling and e-travelling, which make mobility sustainable
- Improve the existing BRT system

c. Research Questions

- Is public willing to switch over to public transport?
- How can a dedicated unit on urbanization be established in Islamabad?
- How can the negative impacts of urbanization be addressed in Pakistan?
- What is the importance of vertical infrastructure in Pakistan?
- How can green cities be promoted in Pakistan?
- What is the economic impact of diminished mobility in Islamabad?
- What is the carbon footprint of transport sector in Pakistan?
- Why has Pakistan failed to introduce mass transit system in major cities?
- What is the importance of promoting walkability in Islamabad?
- What is the scope/practicalities of bus-hailing services in Islamabad?
- How can a public private partnership framework be developed for facilitating mobility?

Input from participants on research topics, next steps and key takeaway of session displayed on meta-cards

Dialogue 3
Research Methodology

The dialogues helped narrow down research questions and formulate a comprehensive methodology to conduct research.

Research Questions Refined:

1. **What is the landscape of urban mobility in Islamabad and how does it impact the environment?**
    a. What is the level of public willingness in twin cities to use public transport?
    b. Is environment a consideration while choosing the mode of transport/mobility?
    c. How has air quality diminished over time?
    d. How has green cover dwindled over years?
2. **How is urban mobility understood among policy makers/planners and what are the challenges faced by the institutions in planning?**
    a. Traffic/Transportation Management vs. Traffic Infrastructure – What is the need of the hour? Which one should be prioritized?
    b. What are the key capacity constraints in traffic management of ICT?
    c. How effective are EIAs?
3. **What are the issues faced by the dwellers of Islamabad owing to transportation sector? (economic, environmental and social life)**
    a. Gender related issues
    b. Distance and affordability
    c. Safety and security
    d. Health and environmental degradation
4. **What are the means to resolve issues around transportation and how should the best practices (private sector) be up-scaled to curb resultant socio-economic and environmental issues?**
    a. What type of public transport facility can be established in ICT to make public transport efficient, accessible, and easy to use by the masses?
    b. How can Islamabad's Block/Grid Structure be used as a major advantage in creating a simple public transport system which can be used by residents to access all parts of the city conveniently and efficiently?
    c. How can the capacity constraints of institutions be addressed?
    d. How can schools and organizations be incentivized to provide bus service for their members?

e. How can we address the data gaps in traffic?

f. What efforts can be made to ensure road safety, especially pedestrian safety?

g. How can parking problem be addressed?

h. What is the future of electric vehicles?

i. Can the Islamabad Traffic Police (ITP) Radio Channel and other forms of digital/ social media be used more effectively to bring behavioral change?

Participants of the third dialogue discuss topics for research on urban mobility in the twin cities

Dialogue 4
Improving Mobility to Mitigate Climate Change Risks

The 'situation room' format/method was adopted for the fourth dialogue to help outline solutions for the transport problem in Islamabad. The format is used in real-time emergency situations to get expert opinion and solutions for a problem at hand. Situation presented to the team was 'to improve mobility to mitigate climate change risks in Islamabad'.

Solutions presented by groups in the "Situation Room":

The main issues identified by the groups were:

a. Traffic congestion due to uncontrolled growth in the city's population – while it is impossible to restrict the population growth in the city, better management of traffic could alleviate the situation

b. Lack of basic standardized facilities in each sector due to which there is a significant need for travel and reliance on private vehicles – this reliance needs to be reduced

c. Lack of a proper integrated traffic management

d. Violation of residential area use

For these issues, the following solutions were proposed:

i. Mass Transit:

– Encourage the use of public transport by improving the infrastructure of mass transit service such as Metro Bus Service. There is a need to introduce shuttle service/feeder routes for Metro Bus Service so that it connects different parts of the city.

– Introduce an underground subway or railcar service

ii. Standardized Facilities within the Residential Sectors:

– Introduce and enforce land-use policies which discourage commercial activities in residential areas

– Private schools should operate in markaz or designated area rather than the residential area

– Building plans should not be approved without ensuring that they have adequate parking space

iii. People Centric Transport Infrastructure:

– Introduce motorbike and bicycle lanes

– Improve infrastructure to cater to the needs of all commuters, which include pedestrians, bicycle riders, senior citizens, and people with special needs

– Enforce optimal utilization of existing transportation infrastructure, and use technological innovations for the development of an integrated transport system

– Introduce school buses to discourage private pick and drop services

iv. Behavioral Change:

– Impose parking charges to discourage use of private vehicles

– Create awareness about the negative impact of motorized transport to induce behavior change

– Create awareness about the harmful impact of transport to induce behavior change

– Impose policies such as odd-even day, car-rationing system or a day without a car

Ms. Mome Saleem - founding ED, IoU presenting the situation room scenario to the participants of the fourth dialogue

Conclusion

The focus of mobility in the twin cities is limited to facilitation of vehicular movement. Islamabad was planned and designed to have a city center/ downtown in the middle of each sector, however, unplanned growth of private schools in residential areas, and high-rise shopping malls are creating problems of access and traffic flow in the city. Parks and other amenities are becoming non accessible for pedestrians, especially women and children, who have to rely on vehicular mobility, which restricts their overall mobility. The road structures do not accommodate the needs of pedestrians and cyclists. In addition, the lack of holistic mass transit system has resulted in a preference for individual mobility.

A city's population should be proportionate to the resource base available. Moreover, special attention should be given to the mobility demands of women, children and other vulnerable groups, who lack access even to the existing facilities. It is, therefore, of utmost importance that an informed research is conducted to reach out to the policy makers so that an inclusive, sustainable and environment-friendly plan is put in place.

Going forward, IoU will conduct a comprehensive research to analyze the impact of transportation on environment. A mix of primary and secondary methods including Geographic Information System (GIS) mapping will be carried out to inform policy actions and options around transportation that are eco-friendly.

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Annexure A: Agenda of the Dialogue Series

Dialogue 1: Unbundling the Concept of Urban Mobility for developing countries - A Case of Pakistan

23rd November 2019, Saturday

Item	Speakers/ Facilitator	Time
Session: Introduction **Format:** Presentations **Notes**: Chatham House Rules and Identification of Harvesters		
Introduction & Welcome Remarks	Ms. Mome Saleem – Founding Executive Director, Institute of Urbanism	11am to 11:15am
Key Note: The Concept of Urban Mobility beyond Transportation	Dr. Kamran Ahmed – Assistant Professor, NUST	11:15am to 12:00pm
Urban Mobility in Developing Countries – The Missing Links	– Dr. Ejaz – Director Ecological - Former Director, World Wide Fund for Nature – Ms. Aniqa Arshad – PRIME Institute	12:00pm to 1:45pm
Session: Transport, National Parks and Pollution **Format:** Presentations		
Mobility and Margallah Hills National Park	Dr. Anis ur Rehman – Head Chairperson, Islamabad Wildlife Management Board	2:15pm to 3:30pm
Carbon Emissions and Transportation Sector of Pakistan – NEEDS Study	Mr. Shakil Ahmad Ramay – Executive Director, Zalmi Foundation	
Session: Night's Owl Session (6pm to 8:30pm) **Format:** Story-telling Session **Moderated by**: Ms. Mome Saleem – Founding ED, IoU		
Story Telling on Urban Mobility in Pakistan – Karachi (Mr. Malik Zaheer ul Islam) – Peshawar (Mr. Muhammad Israr – Former Director General Bus Rapid Transport Project) – Islamabad (Dr. Ejaz Ahmad – Director Ecological & Former Director WWF)		

Dialogue 2: Traffic Issues and Planning in Islamabad

24th November 2019, Sunday

Session: Traffic issues in Islamabad and planning **Format:** Panel Discussion **Moderator:** Ms. Mome Saleem – Founding ED, IoU **Notes:** Recap by Harvesters		
Moderated discussion Panelists: – Mr. Azam Lodhi – Director Traffic Engineering and Transportation Planning CDA – Mr. Jawed Ali Shah – Habitat Programme Manager, UN-Habitat – Ms. Farzana Altaf – Director General, Environmental Protection Agency Followed by discussion		
Session: Way forward **Format:** Moderated Open Discussion		
– Group organization – Research – Second dialogue	Ms. Mome Saleem – Founding ED, IoU	12:30 to 1:30 pm
– Closing remarks and vote of thanks	Ms. Mome Saleem – Founding ED, IoU	

Dialogue 3: Workshop on Research Methodology

29th November 2019, Friday

Item	Speakers/ Facilitator	Time
Session: Workshop on Research Methodology **Format:** Interactive Discussion		
Introduction Recap, Topic and Dialogue Series	– Ms. Mome Saleem – Founding ED, IoU – Dr. Ejaz Ahmad – Director, Ecological, Former Director WWF	10am to 10:15am
Workshop How to Make Urban Mobility Sustainable – Discussion on Methodology	Ms. Mome Saleem – Founding ED, IoU	10:15am to 12:30pm

Dialogue 4: Improving Mobility to Mitigate Climate Change Risks

29th November 2019, Friday

Item	Speakers/ Facilitator	Time
Session: Impacts of Urban Mobility on Environment **Format:** Situation Room **Notes:** Chatham House Rules		
Situation Room - Solutions for Sustainable Urban Mobility & Technical Working Group	Participants divided into 3 groups	2:30pm – 3:15 pm
Way Forward	Ms. Mome Saleem – Founding ED IoU	4pm – 4:15pm

Annexure B: List of Participants

	Name	Organization
1	Abbas Bilgrami	Circles 360
2	Abdullah Dayo	Friedrich Ebert Stiftung
3	Abid Ali	Samaa TV
4	Adil Danial	World Wide Fund for Nature
5	Afzal Khan	Local Government
6	Ahsan Nawaz Khan	Daily Mubaligh
7	Ali Jabir	Associated Press of Pakistan
8	Dr. Anis ur Rehman	Islamabad Wildlife Management Board
9	Aniqa Arshad	PRIME Institute
10	Asghar Hayat	Gourmet News Network
11	Arzoo Kazmi	Roze News
12	Dr. Audil Rashid	University of Gujrat
13	Ayesha Majid	Institute of Urbanism
14	Azam Khan Lodhi	Capital Development Authority
15	Dr. Ejaz Ahmad	Director Ecological & Former Director WWF
16	Faiz Paracha	Radio Pakistan
17	Faisal Alvi	Daily Mubaligh
18	Faisal Khan	Samaa TV
19	Fakhar Yousafzai	Khyber News
20	Farzana Altaf	Environmental Protection Agency
21	Helga Ahmed	Development Professional
22	Dr. Imran Khalid	Sustainable Development Policy Institute
23	Jawed Ali Khan	UN-HABITAT
24	Dr. Kamran Ahmed	National University of Science and Technology
25	Malik Zaheer-ul-Islam	Asian Development Bank (Consultant)
26	Mome Saleem	Institute of Urbanism
27	Muhammad Amjad	Global Change Impact Study Center
28	Muhammad Kashif	Sustainable Development Policy Institute
29	Muhammad Israr-ul-haq	Former Director General Bus Rapid Transit
30	Parveen Ejaz	Ministry of Climate Change
31	Rafia Mahmood	World Wide Fund for Nature
32	Rasheed Khalid	The News
33	Rina S. Khan	Express Tribune
34	Safyan Kakakhel	Civil Society Coalition for Climate Change
35	Samima Durrani	Development Professional
36	Sanaullah Aman	Former Member Capital Development Authority
37	Shakeel Ahmed Ramay	Zalmi Foundation
38	Shams Abbasi	Associated Press of Pakistan
39	Zahid Mahmood	Pakistan Boys Scouts Association

Notes

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