

A city burdened with unplanned overpasses: a grounded theory approach to identify the root cause for its implementation

by

Fabiha Atique Mubassirah

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Approved by:

Major Professor
Dr. Gregory Newmark

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Abstract

The most crucial urban problem in Dhaka, the capital of Bangladesh, is its traffic congestion. The absence of adequate transportation planning and lack of proper integration between infrastructure management bodies have resulted in motionless streets in Dhaka, where vehicles remain frozen on roads for hours. The government of Bangladesh is constructing flyovers or overpasses which are full-grade separations in major intersections of Dhaka. Eight flyovers have already been constructed so far to curb the congestion problem, and to eliminate conflicts between rail-road traffic and potential accidents. But, unfortunately, most of them resulted in poor performance and inefficiency in mitigating congestion. These transportation infrastructure projects have not only deteriorated the traffic condition of the city, but they impede the potential for other long-term sustainable options. Flyover construction is an expensive project for a developing country like Bangladesh, and there could have been several alternative reasonable solutions which were overlooked. This situation necessitates digging into the root causes for the selection and implementation of flyover projects in Dhaka. The study aims to identify the reasons why the government of Bangladesh is implementing flyover projects in Dhaka. A grounded theory approach has been followed to inductively derive a theory behind the reason of this flyover scenario. Content analysis and interviews of the stakeholders and policy makers have been done to collect the data. The theory derived in the research provides an explanation for the root cause of the present traffic disaster. The analysis reveals that weak governance of Bangladesh which includes political decision-making and ineffective institutional framework motivated this infrastructure failure in Dhaka.

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Dedication

To my beloved husband. My master's degree from Kansas State University is happening only because of him. His constant support and motivation have driven me to sustain and flourish throughout my journey.

Chapter 1 - Introduction

Background of the Study

Transport infrastructure is a crucial social and economic asset, as it defines space and regulates mobility. Decisions on infrastructure make long lasting impacts, even decades and centuries. Hence, transport infrastructure planning and financing have always been controversial political topics nationally and globally (Short & Kopp, 2005). Despite the massive amount of money being spent and invested on transportation infrastructure, surprisingly few systematic knowledges exist regarding costs, benefits, and risks involved (Flyvbjerg, Bruzelius, & Rothengatter, 2003). Flyovers are an important component of transport infrastructure and are constructed at busy intersections or along the highways to facilitate the smooth flow of traffic. The intended purpose of flyover construction is to reduce congestion in urban areas as a means of “unlocking” signal optimization strategies to produce a network of continuous flow of streets (Recker, McNally, & Root, 1985).

Dhaka is the center of political, commercial and cultural activities of Bangladesh; and it has now been announced as 26th Mega City and 10th most populous city of the world (S. Khan & Hoque, 2013). Dhaka’s traffic congestion is costing its people around 3.2 million working hours daily, according to World Bank (World Bank, 2007). The city’s vehicle speed has reduced from 21 kilometers per hour to 7 kilometers per hour in the last ten years, and it is deteriorating everyday despite its low level of motorization (Kabir & Islam, 2015). It is an arduous task for Dhaka to balance the present travel demand and make the transport network sustainable, with this ever-increasing travel demand. Therefore, poor infrastructure is responsible for the worse condition of roadway environment, reduced mobility and deteriorating performance of overall traffic system (S. Khan & Hoque, 2013). The country has failed to adopt any comprehensive decentralization policy to overcome the population

boost and increased traffic problem (Taleb & Majumder, 2012). Instead, eight flyovers have been constructed in last few years to attempt to solve the traffic problem in Dhaka city. According to performance evaluation and assessment studies of the flyovers, they have not only failed to curb the traffic congestion, they exacerbated the overall situation. Furthermore, many flyovers have faulty designs, and the busiest routes in Dhaka city have been undergoing construction without providing any alternative routes for existing traffic. This has led to more congestion and has increased risk for the pedestrian and other users of these routes or intersections (Taleb & Majumder, 2012).

From early 1990s, the government of Bangladesh has done many studies (e.g. Dhaka Integrated Transport Study (DITS), Dhaka Urban Transport Plan (DUTP), and Strategic Transport Plan (STP) and Revised Strategic Transport Plan (RSTP)) to help solve the traffic congestion issue in Dhaka (Akther, 2009). The STP 2005 included eleven alternative plans proposed by consultants to decrease the traffic congestion in Dhaka (Dhaka Transport Co-ordination Board, 2007). Unfortunately, the proposal with the highest cost and the lowest sustainability was accepted by the elected officials according to experts, despite having strong opposition from consultants and civil society (Akther, 2009). Also, constructing flyovers are a supply solution, which eventually creates its own demand for more vehicles. Thus, these flyovers are promoting more private vehicles in the city, resulting more congestion.

Flyovers have been built in major intersections of Dhaka with a purpose to ease the traffic congestion and improve mobility in the city. Many studies and analyses revealed that flyovers have not been successful in general to segregate traffic to above-grade from at-grade at rail-road conflicting points. They have failed to provide any facility to non-motorized vehicles and public transport, enhancing mobility in urban road and reducing traffic congestion in

Dhaka. Moreover, construction of flyovers is reducing the at-grade rights-of-way (ROW) of the streets, making public transport unpopular and weakening the future scope for public transit-oriented development. Flyovers are not easing the congestion of Dhaka, rather they are shifting congestion from one point to another. Despite all these problems, flyover projects are still being implemented by government of Bangladesh and they still find these infrastructure projects as a solution to curb its traffic congestion.

Statement of Purpose

The purpose of this research is to address the reasons why government is taking the high cost and least sustainable projects like flyover construction in Dhaka. Grounded theory approach was followed to inductively derive a theory to gain an understanding about the root cause on the implementation of flyover construction projects. It is a qualitative research method where data were collected through interviews and content analysis.

Bangladesh is a developing country where many of its people live below the poverty line. Policy makers need to make sure about expensive infrastructure projects to be sustainable and long-term. So, it is not sensible for the policy makers to consider these high cost projects when there are many sustainable alternatives and more affordable long-run solutions (Rahaman, 2018). There must be some underlying reasons for the government leaning towards these projects. This study intends to identify the fundamental reasons behind the current issue in Dhaka. It will enlighten people of the phenomenon that is negatively affecting them. Also, it can be an eye-opening study for the consultants of Bangladesh as well as other developing countries who work on infrastructure projects.

Research Question

What are the factors that drive policy makers of Bangladesh to select Flyover projects to solve traffic congestion problem in Dhaka?

- How do policy makers frame the problem of flyover construction in Dhaka?
- What are the contributing factors for the implementation of these projects?
- How do civic society (Transport experts, Consultants, Professors and Researchers) frame the issue?
- To what degree are they involved in decision making and implementation of the projects? What do they think are the reasons of these projects got accepted?

Definition of Terms

1. **Flyovers:** Flyovers are a grade separated or elevated bridge, expressway or similar structure that crosses over another road or railway. The term is commonly used in the United Kingdom and in most Commonwealth countries and is known as “overpass” in United States. In the thesis, the author used the term “Flyover” throughout the thesis for its contextual use, although the title stated “Overpass” for its common use in United States. Flyover is a grade-separated structure that allows arterial through traffic to go over a crossing arterial or collector without slowing down or stopping for an at-grade signal capacity (Kabir, 2014; Recker et al., 1985).
2. **The Cabinet of Bangladesh:** It is the chief executive body of the People’s Republic of Bangladesh. The Cabinet is the ultimate decision-making body of the entire government, within the parliamentary system of government in traditional constitutional theory of Bangladesh. It is composed of the Prime Minister and thirty-three Cabinet Ministers, eighteen State Ministers and two Deputy Ministers (“55. The Cabinet,” n.d.).

3. **STP:** Long-range transportation plan for Dhaka Metropolitan Area (2004-2024), to address projected transportation needs for future developments with special emphasis on integrating the planned land use for the future growth of the city (Dhaka Transport Co-ordination Board, 2007).
4. **RSTP:** The Revised Strategic Transport Plan (RSTP) has been conducted in 2016 to review and modification of the Strategic Transport Plan (STP), also to help build the capacity of the Dhaka Transport Coordination Authority (DTCA). The RSTP was conducted by the Government of Bangladesh, with technical assistance from Japan International Cooperation Agency (JICA) (Dhaka Transport Coordination Authority, 2016).

Scope of the Study

This research gives a comprehensive overview of the transport sector of Bangladesh. Specifically, it has focused on one of the most highlighted and controversial transport projects in recent years of Dhaka, namely flyover construction. This thesis is guided by empirical analysis of large infrastructure projects and their issues around the world. The investigation focuses on the reasons of this flyover failure and why it has been accepted by government of Bangladesh in the first place, among all other feasible solutions. For this purpose, the study explored policy documents of Bangladesh related to the transport sector and planning, such as- Strategic Transport Plan (STP), Revised STP (RSTP), Bangladesh Transport Policy Note, National Land Transport Policy, Dhaka Urban Transport Network Development Study (DHUTS), etc. This is a qualitative research where grounded theory methodology has been used. The main investigation of this research was the interview section and the author tried to reach out to policy makers and stakeholders related to transport and infrastructure projects in Bangladesh. Consultants and engineers in transport agencies, urban

planners of the City, experts and faculties in transport planning were interviewed to share their knowledge and concern regarding the matter.

Limitation of the Study

Bangladesh has limited option of “Freedom of Information” right, so access to government projects’ documents was challenging. Restricted access to flyover project plans were one of the limitations of this study. Another major limitation was scheduling interview dates with the interviewees as most of them are high government officials and have busy schedules. In some cases, networking and intermediary contact were needed to reach out to the officials. Interestingly, the majority of the project managers of past flyover projects were impossible to reach, either they were out of the country or information was restricted. So, most important target interviewee of this research- project managers of the flyovers couldn’t be interviewed. Finally, time constraints were an issue for the research, as the data collection and initial analysis were done in three months of Summer of 2018, as the author could visit to Bangladesh in that period.

Organization of the Thesis

Chapter 1: Introduction- this introductory chapter provides a brief background of the thesis, while the remainder of the thesis is structured into five more chapters.

Chapter 2: Literature Review- outlines the theoretical literatures relevant to this research.

The chapter starts with the historical background of flyovers all over the world, key issues and challenges associated with overpasses as large transport infrastructure. Case studies from developed and developing countries have been portrayed in the chapter where they re-imagined flyovers into public places or more effective use of infrastructures, representing to some degree what New Urbanists defined as efficient use of places and infrastructures in a

city. Then the chapter dives into the elaborate discussion on grounded theory methodology used in the thesis. Two case studies have been provided in this chapter to present how grounded theory methodology has been used in other researches.

Chapter 3: Transport System and Flyovers in Dhaka: An Overview- presents the background of the transportation system in Dhaka and elaborately portrays an overview of flyovers in Dhaka. This chapter investigates the historical background of the transport system in Dhaka, policy and institutional framework, current transport scenario in Dhaka and its challenges. A brief description of the flyovers and controversies associated with this infrastructure are presented. This chapter basically gives the background of existing problem of the research and sets out the rationale of the research question.

Chapter 4: Methodology- elaborately describes the methodology of the study. Brief discussion of each stage of grounded theory has been laid out in this chapter.

Chapter 5: Data Analysis and Findings- gives a brief description of data collection and presents the findings in a systematic manner with analysis. Memos have been shown in the Appendix B of the thesis. The chapter illustrates three coding stages of analysis with description and findings of the analysis.

Chapter 6: Recommendation and Conclusion- provides recommendations for the possible solution to this current transport disaster in Dhaka. Then it sets out conclusion of the thesis with describing the concluding remarks and research contributions of the studies.

Chapter 2 - Literature Review

As the research is a qualitative study, literature review has played an integral part in developing the research background. The literature review introduces flyovers as large transport infrastructure; where the subtopics have been arranged into discussing- history of flyovers, issues and challenges with flyovers as large transport infrastructure. This chapter provides the key findings of the challenges and repercussions of overpasses in the cities where they were implemented. Some case studies of developed and developing countries have been presented where overpass/flyover construction was dismantled to achieve better and sustainable results. These previous implications are investigated to acknowledge their probable connection with the ongoing flyover projects in Dhaka city and thus create a basis to evaluate their present efficiency. Grounded theory methodology has been introduced in the chapter, with definition and how it is used to inductively derive theory in a research. Case studies are shown as an example where grounded theory was used in two different types of research. The grounded theory approach is again elaborately described explicitly in Chapter 4: Methodology, which was used for this research.

History of Flyovers: Blessing or Curse?

Rapid population and employment growth, tallied by deteriorating traffic congestion, required the need to construct elevated expressways and freeways to capitalize accessibility benefits (Schwartz, 1976). The rise of automobile during the 1920s made the private transit lines financially shaky. Subways and rapid transit were very expensive for private entrepreneurs, and that's why municipal governments became involved. That led to the massive development of large transport infrastructure during the first decades of the twentieth century (Schwartz, 1976). Norman Bel Geddes, one of the fathers of modern American transportation planning, showed Americans a future of technological innovation in

“Futurama” exhibit. Futurama created a model transportation network for projected automobile ownership by 1960, which included series of cutting edge-technologies, such as automated highway system and a network of elevated expressways jutting through vast urban expanses. Over 75 years later, future models of urban elevated expressways are still adapted from “Futurama” and urban planners in cities across America took cues from Bel Geddes’s designs (Waqar, 2016). The adaptation of grade separation concepts in the form of urban flyovers holds significant potential as an effective strategy to reduce conflicts at major intersections while enhancing arterial capacity, efficiency and safety by reducing stoppage of traffic flow at signals (R. MD. Islam & Hoque, 2018).

In general, surface treatments such as signal optimization, channelization and pavement re-striping represent the most cost and time effective means of increasing mobility. So, grade separated facilities have been introduced when all relevant at-grade solutions are found to be exhausted. Studies found that construction expenses, time requirements, land acquisition problems and traffic flow disruptions made grade separation popular. Many cities around the world with congested arterial streets developed plans to mitigate their traffic congestion through the strategic allocation of grade separated facilities at exceedingly saturated intersections (R. MD. Islam & Hoque, 2018; Lang & Machemehl, 1995).

Throughout the 1950s and 1960s, cities across the United States saw massive infrastructure investments in the core of their cities in the form of freeways. The freeways, viewed as a necessity and sign of progress, were primarily aimed at enhancing mobility, promoting economic development, and helping to revitalize inner-urban areas (R. MD. Islam & Hoque, 2018). Flyovers were used extensively and successfully in both Europe and the Middle East around 1980. American grade separation structures were built with heavy-weight, high-speed

trucks in minds, whereas European flyovers were generally meant to alleviate automobile traffic exclusively. Flyovers use minimal rights-of-way, require little installation time and have potential to reduce energy consumptions. Also, the fact that the capacity expansion provides benefits though ‘travel time savings’ have justified and strengthen policies that supported flyover construction. The factors of reducing travel times, creating economies of scale and increasing property values led to the booming of flyovers in the earlier period (R. MD. Islam & Hoque, 2018; Lang & Machemehl, 1995; Rahman, 2017).

Although urban interstates and expressways are now “integral part of urban landscape”, the mid-twentieth century rise of urban elevated expressways proved controversial. This controversy sparked when Robert Moses attempted to build a series of public works affecting people - their homes, business and communities. He built an empire with a vast network of transportation infrastructures against steep cost of the projects, demolition of over 400 buildings, and relocation of 800 business (Flint, 2009). Mobility alone fails to acknowledge the potential land use, environment and quality of life. Many influential urbanists such as Lewis Mumford, Jane Jacobs, Herbert Gans and other voiced criticism against urban highways, overpasses and other similar developments (Kabir, 2014). Jane Jacobs in her “The Life and Death of Great American Cities” stated eloquently that expressways and flyovers “eviscerate” great cities. She argued that, this is not the rebuilding of cities, this is the sacking of cities (Jacobs, 1961). After this, cities’ view towards urban expressways turned skeptical. The desire for high-speed mobility and livability poses a dilemma. Elevated expressways and freeways flow goods and labor throughout a region, increased the dynamics of mobility, though at the expense of place-making, for example- severing long-standing neighborhoods, forming barriers and visual blight, casting shadows and spraying noise, fumes and vibrations on surrounding areas (Cervero, Kang, & Shively, 2009).

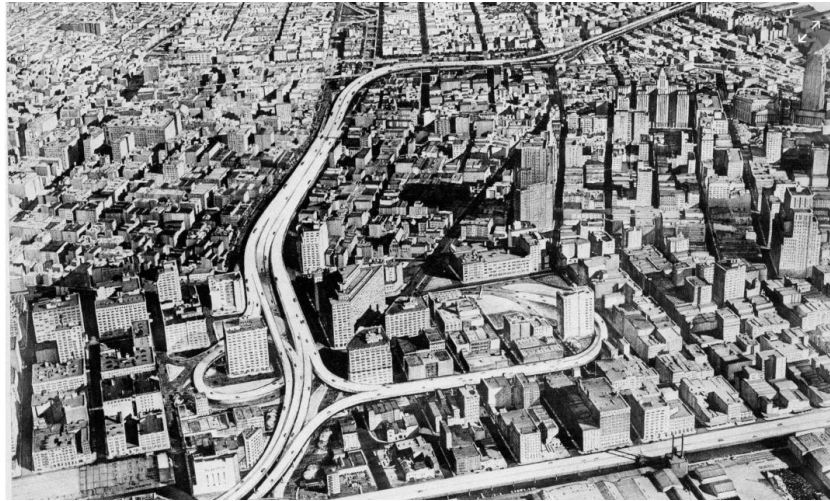


Figure 2.1: An artist's sketch from 1959 of the proposed Lower Manhattan Expressway by Robert Moses, a 10-lane highway through SoHo and Little Italy that required the demolition of 416 buildings

Source: (Paletta, 2016)

With congressional approval of the Federal-Aid Highway Act of 1956, United States has spent billions of tax dollars building and maintaining its highways and overpasses. These highways and elevated expressways were pushed through the social and physical fabric of many cities without regard to the fact that they ripped neighborhoods, created physical barriers and blight, forced residents to move out and consumed valuable open spaces. A spate of new urban highways was built in Brazil that cut a direct route between the downtown and the fashionable South Zone of Copacabana, Ipanema, and Leblon, such as Rio de Janeiro's Rebouças Tunnel and the Freyssinet Viaduct (Kabir, 2014). England became familiar with large infrastructure after 1960 with the construction of the Westway flyover, which cut a large swathe through north Kensington, and passed very close to Acklam Road, overlooking many residents' windows and the Hammersmith flyover. Partially completed Hammersmith flyover-designed to reduce traffic congestion from Central London to the West- became an urban nightmare (Porter, 1998). Bent Flyvbjerg named these large transport infrastructures as an "animal" and said that these multibillion-dollar mega infrastructure projects are crawling all over the cities of Europe. These mega projects have grown larger over time, and this

increased size lead to higher economic risks (Flyvbjerg et al., 2003). With time, the opposition to freeways resulted in a “freeway revolt” movement which gained its momentum in the late 1960s and early 1970s. By the mid-1970s the combination of the anti-freeway movement, environmental movement, increasing flexibility in federal transportation funding and more local and state control over this funding seemed to be effective in impeding the progression of several freeway projects across the country. By the early 1990s, the era of new freeway construction in urban areas was largely over (Kabir, 2014).

Issues with Flyovers as Large Transport Infrastructure

According to Miller and Lessard, highways and flyovers as large transport infrastructure are mainly a “high stake game” characterized by irreversible commitments and skewed reward structures when they are successful, and a high probability of failure with change in dynamics over time (Miller & Lessard, 2001). There are many successful mega-projects that showed fruitful results after certain time both directly and indirectly. On the other hand, there are also many potential problems associated with the mega-projects, which can turn these into what Priemus et al., labeled as “planning disasters”. These planning disasters include low transport performances and mobility, adverse environmental effects (e.g. landscape erosion, noise pollution, toxic erosion), underestimated investment costs and unsatisfactory revenues (Priemus, Flyvbjerg, & Wee, 2008). Bruijn and Leitjen argued that these mega infrastructure projects not only raise a question of technological complexity, but also of social complexity (De Bruijn & Leijten, 2007). Priemus et al. also added to this statement that there are often concerns about public support, and on rationality and consistency of political decisions revenues (Priemus et al., 2008).

Overpasses and highways are capital intensive and need long term planning before construction. The past decade has seen a sharp increase in the magnitude and frequency of major infrastructure projects, which are supported by a mixture of national and international government, private capital and development banks. Thus, Flyvbjerg called mega projects as central to the new politics of distance (Flyvbjerg, 2007a). Infrastructure planning and investment has always been planned, evaluated, decided and financed at national level. On this point, the planning methods or appraisal techniques may be different, consultative and legal processes may vary; and decision-making process may differ widely, but one common thing all over the world is that – they all take longer time from conception to opening. Furthermore, project implementation is very complex, time consuming and they can be blocked by hostile interest groups for very lengthy periods (Short & Kopp, 2005). Estimating financial viability of projects are heavily dependent on the accuracy of traffic demand forecasts. Moreover, in the book “Mega Projects and Risk: An Anatomy of Ambition”, the authors provided a great deal of evidence on project evaluation, where they identified a strong tendency in the policy makers to significantly underestimate costs. Flyvbjerg et al. identified the cause for the gap to be “risk negligence and lack of accountability in the decision-making process”. This systematic underestimation of costs and over-estimation of benefits are politely called ‘appraisal optimism’ by World Bank, which Flyvbjerg calls ‘lying’ (Flyvbjerg et al., 2003).

Although, investment in transport infrastructure is vital to growth of any country, a lasting impact of the investments depend not on “how much” but on “how well”. For example, Japan spent \$6.3 trillion or an annual 4.7 percent of GDP on its infrastructure projects in the 1990s and 2000s. But the growth was only 0.5 percent a year, indicating that the investments had a low growth effect. They could get higher impact from its spending, if Japan might have

addressed its nation's issues of population aging, energy supply and food prices instead of largely building more roads. Specifically, in USA, investments can be made on more technological innovation on transport or demand management to increase efficiency and handling capacity than supplying more roads. Investment is required in alternative fuels, sharable vehicle networks, traffic analytics and transit-oriented developments (Thomas, 2016).

Project approval and construction on large transport infrastructure projects often proceed before all technical feasibility and engineering studies are completed which leads to escalating costs as more details about the projects are determined (Siemiatycki & Institute on Municipal Finance and Governance, 2016). Such projects are inherently risky because most of them involve long planning horizons and complex interfaces (Flyvbjerg, 2007b).

Moreover, complexity and uncertainty of large transport projects led to inaccurate forecasting. Project delay is another common issue in large infrastructure projects. Strikes, challenges in obtaining materials or skilled workers, and most importantly disputes among different contractors can dismay a tight project delivery schedule. The last but the foremost issue with these types of projects is “mis-information” about costs, benefits, and risks.

Flyvbjerg et al. have demonstrated that poor quality of cost-benefit analysis of the projects led to this misinformation (Flyvbjerg, 2007b, 2007a; Flyvbjerg et al., 2003). Also, wrong data and estimates may often result in loss in project. For instance, Warnow tunnel in Borth-German Rostock attracts less traffic than estimated by its private owner, which in reflection made it a bad investment (De Bruijn & Leijten, 2007). There have been many projects with far lower returns than predicted and with very low economic benefits (Priemus et al., 2008).

Case Studies of Flyovers Re-imagined

In the 1960s and 1970s, civil rights and environmental activists joined together in the anti-freeway movement and demanded changes in the transportation policy. They criticized the transportation planning process for inadequate treatment of the social and environmental impact of transportation facilities; for ignoring immediate problems and long-term solutions; and for using rigid technical procedures to justify bad projects (R. MD. Islam & Hoque, 2018; Kabir, 2014). The proponents of freeways became successful in halting several planned freeway projects in USA. Many cities are re-evaluating past highway policies that pushed elevated highways through central cities, resulting severe damage to housing, business, and neighborhoods. Motivated by the movement of Congress for New Urbanism (CNU), at least two dozen American cities have discussed or planned removals or teardowns of elevated expressways or at least segments of them, and replacing them with at-grade boulevards, parks and open spaces to reclaim the resulting land for housing, recreational space and commercial development as well as to re-knit the urban fabric that was destroyed (Mohl, 2012). In Seoul and Tokyo, flyovers have been dismantled or are in the process of being dismantled. Flyover demolition cases have been observed in North America as well in cities like Boston, New York, Portland, San Francisco, Milwaukee, Toronto etc. who have removed elevated freeways and a number of other cities are currently debating the future of the ageing freeway infrastructure (R. MD. Islam & Hoque, 2018). Some case studies of the dismantling of flyovers are presented in the following.

Harbor Drive in Portland, Oregon: An example of the paradigm shift of designing cities from automobile to livability would be in Portland, Oregon. More than thirty years ago, people in Portland, Oregon voted to bulldoze Harbor Drive freeway and to replace it with a thirty-seven-acre waterfront park on the edge of downtown Portland. Overwhelmed with high

air pollution and a tangle of highways, both turned the downtown area into crime ridden areas. This expressway removal helped transform Portland into city with multi-modal (pedestrian and mass transit-oriented development) from an automobile one. Portland's tear down of Harbor Drive also catalyzed similar freeway removals in other cities ("Harbor Drive," 2017; Waqar, 2016) .



Figure 2.2: Harbor Drive (left) and McCall Waterfront Park after the removal of Harbor Drive (right)

Source: ("Harbor Drive," 2017)

Embarcadero Freeway in San Francisco: Following the 1989 Loma Prieta Earthquake, San Francisco razed double-deck freeways and replaced with attractively landscaped, multi-way boulevards (Cervero et al., 2009). San Francisco's deconstruction of its urban elevated expressways was particularly attractive as it suggested that cities would still proceed with countless access-oriented transit, commercial and quality of life benefits with freeway removal, despite the high cost of demolition (Waqar, 2016). The Boulevard built in 2002, was deemed an impressive success from many angles. It was a dynamic multi-use boulevard and contains two banks of thoroughfare traffic, three lanes going each direction and a streetcar line running down the center. This allowed accommodation of significant auto traffic and gives resident options other than private vehicles. The area has sprung to life since the freeway demolition. Hundred acres of land along with the waterfront which was once

dominated by the elevated expressway gave way to new public plaza and waterfront promenade. This development has enhanced dense commercial development lined with the street, housing and jobs (Congress for the New Urbanism, 2017).



Figure 2.3: Embarcadero Freeway and Ferry Building, in 1960 (left); Renovated Ferry Building and boulevard today (right)

Source: (Congress for the New Urbanism, 2017)

Big Dig in Boston: The most notorious freeway demolition project is “Big Dig” in Boston. It has been mentioned in an article of “Journal of Urban Affairs” that the conversion from freeway to parkway had a positive impact on residential and commercial property values (Tajima, 2003). The Big Dig proved to be one of the most technically challenging infrastructure developments ever undertaken in the United State. It was consisted of two major projects- an elevated six-lane highway which is the existing Central Artery and extension of Massachusetts Turnpike. The elevated expressway was demolished which freed up twenty-nine acres for attractive boulevards and parks, and for the mobility an eight to ten lane underground expressway was replaced (Flint, 2015).



Figure 2.4: Downtown Boston in 2002 (left); Downtown Boston after the Central Artery was replaced with an underground tunnel in 2008 (right)

Source: (Flint, 2015)

Cheong Gye Cheon (CGC) project: The most dramatic flyover removal has been the Cheong Gye Cheon (CGC) project in Seoul, South Korea. The flyover was torn down and replaced by an urban stream and linear park. This bold initiative aimed to enhance the quality of central-city living by replacing a mobility asset resulting nuisance with an attractive urban amenity (Ryu & Kwon, 2016).



Figure 2.5: Cheong Gye Cheon Stream restoration project- before the flyover removal (left) and after (right)

Source: (Landscape Performance Series, 2011)

This transformation provided immense landscape performance benefits in terms of environmental, social and economic aspects. This new project provided flood protection,

restored bio-diversity and reduced pollution. The restoration project contributed to 15.1% increase in bus ridership and 3.3% in subway ridership in Seoul between 2003 and 2008 (Landscape Performance Series, 2011).

All over the world, there is a growing consensus against flyovers, which are not only eye sore but, in many cases, failed to curb traffic congestion. Transport planners are now agreeing on the fact that demand management is better solution than increased supply. Recent studies in Asian region are also highly demotivating the construction of flyovers. New Delhi had five flyovers in 1982, and at the end of 2014, the number has increased to seventy-four. The study by Bansal and Singh revealed that half of the increased roadway capacity is consumed by added traffic in about five years, 80% of increased capacity is eventually consumed by induced traffic. They alarmed that it will be impossible to keep adding to infrastructure beyond its physical limits (Bansal & Singh, 2013). Maji et al. also doubted the overall benefit of flyover in non-lane based heterogenous traffic state condition in developing countries like Bangladesh. The research revealed that traffic operations underneath flyovers remain unmanaged and often pose a major concern in developing countries with non-lane based heterogenous traffic (Maji, Maurya, Nama, & Sahu, 2015). For these reasons, flyovers were discouraged to build when the negative consequences of construction of flyovers came into light.

Methodological overview of Grounded theory

Key definition of Grounded theory

The grounded theory approach is a qualitative research method which uses a structured set of procedures to develop an inductively derived theory about a phenomenon (Corbin & Strauss, 1990). According to Creswell (2009), grounded theory is a qualitative strategy of inquiry in

which the researcher derives a general, abstract theory of process, action and interaction grounded in the eyes of participants in a study (Creswell, 2014). The process involves using multiple stages of data collection to select and define interrelationships of categories of information (Charmaz, 2006). The theory evolves during the research process and is produced by continuous interplay between analysis and data collection (Glaser & Strauss, 1967). In other words, grounded theory emerges inductively from the data (Chesbro & Borisoff, 2007).

Table 2.1: Comparison of Logic-Deduction and Grounded Theory Research Approaches

Topic	Logic-Deduction	Grounded Theory
Purpose	Verification of existing theory and description	Generation of Theory
Sampling objective	Data Collection	Concept collection for theory
Data	Preplanned throughout	Only the initial set is preplanned
Research Design	Preplanned	Emergent/flexible
Sample	Established boundaries	Ongoing inclusion of groups
Aim	Accurate evidence	Generation of theory by developing categories
Comparison Groups	Can only compare comparable groups	Can compare any groups
Note taking	Whole group	Categories help guide
Process	Distinct phase: Sampling, Coding, Analysis	Simultaneous conduct of: theoretical sampling, comparative coding and analysis

Source: (Glaser & Strauss, 1967)

Methodologically, grounded theory provides the guidelines to identify categories, how to make links between categories and how to establish relationships between them. The theory that is the end-product of this process provides us with an explanatory framework to

understand the situation under investigation (Glaser, 1992). In grounded theory, several key strategies are used to identify, refine, and integrate categories which ultimately lead to the developed theories. The key strategies include constant comparative analysis, theoretical sampling, and coding, theoretical saturation -which will produce substantive theory (Glaser & Strauss, 1967).

Case Study 1: A Grounded Theory Study of Project Managers in the Public Works Department of Malaysia (PWDM)

The focus of this study has been to examine and provide theoretical understanding of the reasons why project managers have varying success in delivering projects. For this reason, grounded theory method is adopted for data collection and analysis by the Public Works Department of Malaysia (PWDM) (Mohamad Zainal, 2012).

The idea is to produce a new explanation of the phenomena being studied and way of discovering theory. Data collection and analysis phases are done simultaneously. Data analysis begins to develop theories and explanation that suggest further cases to sample involving comparing people, places, events, conditions and settings.

In this research, eleven steps regarding grounded theory was conducted (Mohamad Zainal, 2012). They are the following:

Step 1: It begins with general research questions.

Step 2: Relevant people or incidents are theoretical samples. Researcher chose the people and incidents based on who is involved in the phenomenon occurs in the research area.

Step 3: Relevant data is collected. Interviews were conducted to capture the experience of people in their own words.

Step 4: Data was coded, which might generate concepts at the level of open coding. There had been constant movement back and forth between first four steps.

Step 5: Categories were saturated through the coding process.

Step 7: Relationships between categories were explored in such a way that a hypothesis about connections between categories emerged.

Step 8 and 9: Further data were collected and by doing theoretical sampling.

Step 10: The collection of data was governed by the theoretical saturation principle.

Step 11: Testing for the emerging hypothesis led to the specification of substantive theory.

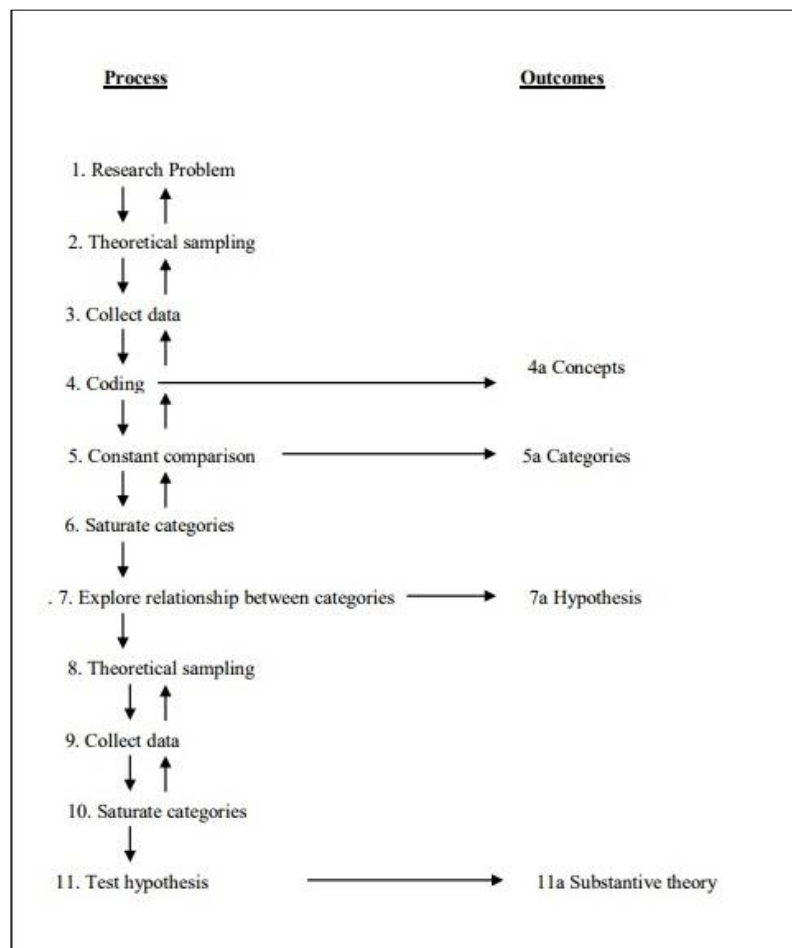


Figure 2.6: Process and outcomes in grounded theory

Sources: (Bryman, 2012)

The main finding of this thesis is that project management in the context of the PWDM can be conceptualized as a social process called ‘Maintaining Project Alignment (MPA)’. This is

the core category and the phenomenon of a substantive theory, which appeared and developed through the data analysis. By using grounded theory, the literature comparison has validated the findings of the study, and contributed to existing literature on the subject (Mohamad Zainal, 2012).

Case Study 2: Toward a Grounded Theory of Community Networking

The focus of the dissertation was to develop a grounded theory of community networking that would help inform efforts designed to use information and communication technology to enhance or even transform the lives of individuals from disadvantaged communities or populations. The significant research question of this study was: how can community networking initiatives be organized to maximize positive results from disadvantaged communities for individuals? The study described how grounded theory approach rarely used in information science research, was employed to examine existing caches of material (Masten-Cain, 2014). Using a grounded theory approach, this study involved repeated and simultaneous iteration of activities, like- data collection, analysis, conceptual coding, memo writing and theoretical sampling (Masten-Cain, 2014). A graphical illustrative to give an overview of the ground theory process in shown below during this study.

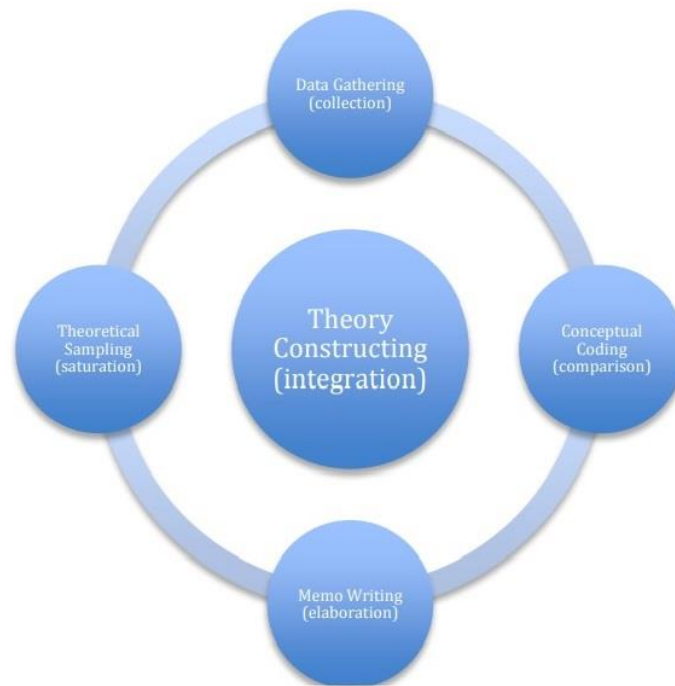


Figure 2.7: Grounded theory process for the study of community networking
 Source: (Masten-Cain, 2014).

Concept mapping of the research

Concept mapping helped to formulize the methodology of the research and indicated the fields where literature review and background study were needed. First, the research question is “What are the factors that drive policy makers of Bangladesh to select flyover projects to solve traffic congestion problem in Dhaka? ”. To get the knowledge of the background and context of the system of Dhaka, the author needed to do background study and literature review on “Flyover in Dhaka”, “Government Initiatives taken” and “Current traffic problem in Dhaka”. To apply grounded theory methodology, literature review of the concept of grounded theory and applications or practice of grounded theory is required. Finally, elements of grounded theory determined the methods of data collection and data analysis procedure.

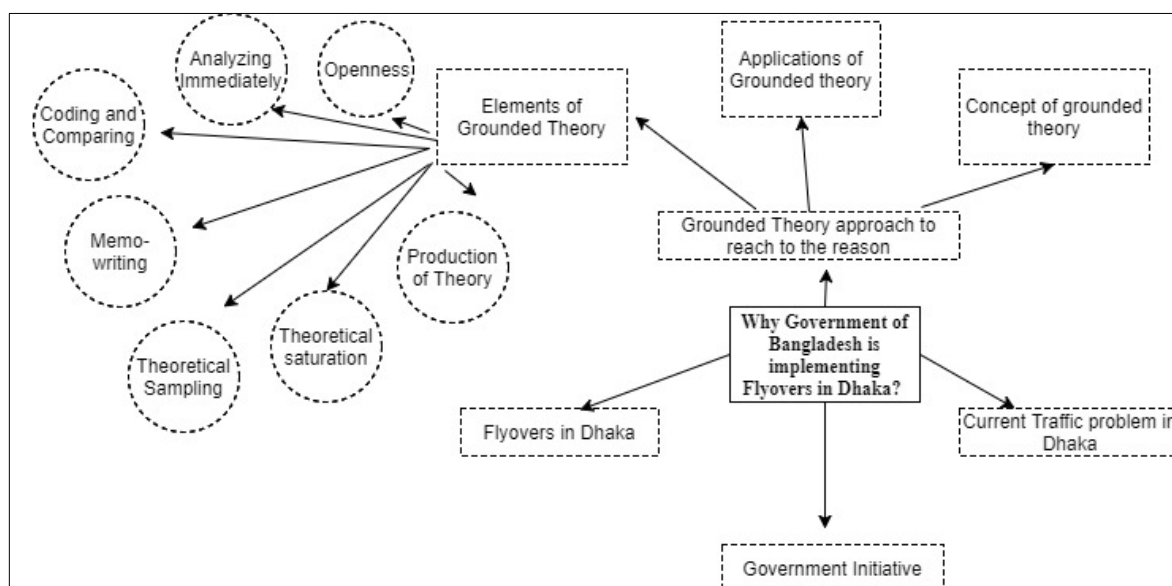


Figure 2.8: Concept mapping of the topics read for the study

Source: Author, 2017

Chapter 3 - Transport System and Flyovers in Dhaka: An

Overview

Bangladesh is an extremely populated country where the transport sector in Bangladesh faces several challenges to provide equitable services and opportunities. The government of Bangladesh has achieved fast expansion of road network providing considerable benefits to population lacking accessibility. This chapter will present a comprehensive background of the transport system in Dhaka, its historical background, institutional policy and framework and current traffic problems and challenges faced by the city. Most important segment of this chapter is the overview of flyovers in Dhaka, the main argument of this research. This chapter will build a better understanding on the context of the problem of this research and then lead to the next chapter for analyzing the reasons behind it.

Demographic Profile of Dhaka

Dhaka is the capital of Bangladesh, a Southeast Asian country. Dhaka is the nation's gateway and economic, business, administrative and cultural hub of the country. The city is in the central part of Bangladesh, in the southern part of the district of Dhaka (Figure 3.1). Dhaka is surrounded by Buriganga river in the south; the Balu and the Shitalakhya rivers in the east; Tongi Khal in the north and the Turag river in the west. Since independence in 1971, Dhaka is witnessing a tremendous growth in population for the availability of more socio-economic opportunities. The area of Dhaka is 118.3 square mile with total population of 19.58 million in 2018, which makes it the densest megacities of the world. According to Social Watch Report 2012, Dhaka controls seventy percent of the country's total money supply, and thus it attracts sixty percent of total investment. Due to this centralization policy, nearly half a million people migrates to Dhaka from other parts of the country in search for better living and employment opportunities in the big city (I. Islam, Mostaquim, & Biswas,

2016). By 2025, the U.N. predicts that Dhaka will be home to more than 20 million people and third largest city of the world (*Demographia World Urban Areas*, 2019). The impact of such rapid growth has created immense pressure on government to provide basic needs and services to the growing population and have major consequences on the ability of the transport sector to provide mobility for all people. Interestingly, although Dhaka City's area is less than one percent of the country's total land area, it supports about ten percent of the total population of the country (R. MD. Islam & Hoque, 2018; Kabir, 2014).



Figure 3.1: Dhaka city map with road, water and rail network
Source: (R. MD. Islam & Hoque, 2018)

Historic Background

Bangladesh has a vast network of highways and rural roads, inland waterways, two seaports, maritime shipping, a railway system, civil aviation and a national airliner. During the liberation war in 1971, most of the existing infrastructures were nearly damaged or destroyed and they had to be rebuilt. After independence in 1971, Bangladesh made big strides to develop a modern transport system to support the needs of a developing economy and expanded its road network to 168,392 miles. Since then the city has been experiencing large scale migration, causing the city to continuously expand its physical boundaries without a strategic growth plan. This has resulted in major urban problems like increased squatter settlements, monstrous traffic congestion, pollution and social problems (e.g. unemployment, social polarization, forced eviction and others) (Kabir, 2014). In 1984, the Bangladesh government outlined its rural development strategy and developed major road corridors connecting Dhaka with key economic centers and towns, and a network of village roads connecting communities to market centers and main roads. Transportation demand has grown (9% per year) vigorously from economic expansion and social development in Bangladesh since its independence. The share of passenger transport demand provided by road transport increased from 54 percent in 1975 to 88 percent in 2005 (*BD-Transport-Policy Note*, 2009).

Current Transport Scenario in Dhaka

The transport system of Dhaka is mainly road based, although it has existing waterways and railways from the British period where their uses are very limited within the metropolitan area. Continuous focus of road based infrastructure has weakened the potentialities and attractiveness of other types of transportation system (Kabir, 2014). Metropolitan Dhaka has traditionally been served by a wide variety of transport modes broadly classified into two groups: the motorized transport (e.g. bus, mini-bus, truck, car, auto-rickshaw, auto-tempo,

motorcycle/motorbike, etc.) and non-motorized transports (e.g. rickshaw, rickshaw van, bicycle, push cart, etc.). In total, public transport usage in Dhaka is 84%, where other 16% of people use their own modes of transport. The car ownership in Dhaka is 10% (R. MD. Islam & Hoque, 2018; Rahman, 2017). If only central metropolitan area of Dhaka is considered, rickshaw (47.3%) and bus (27%) dominate in the city. It indicates most of the inhabitants in this region are unable to afford private transport and are reliable on low cost public transport (World Bank, 2007).

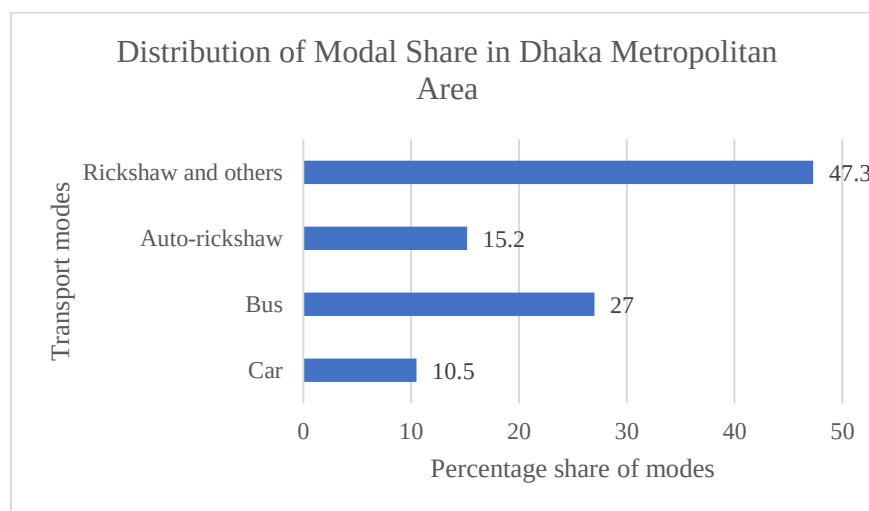


Figure 3.2: Percentage share of transport mode in Dhaka Metropolitan Area

Source: (World Bank, 2007)

The Dhaka Integrated Transport System (DITS) household survey data reveals that the primary users of motor vehicles in Dhaka are higher income households. Motor vehicle is growing on road as an average rate of 10% annually. Nevertheless, with the exponential increase in motorization in Dhaka, limited attention has been paid to pedestrian and public transport facilities. Recently, flyovers are being built to accommodate more cars in the city with no accommodations for public activities; they are built to separate the people from roads in the name of pedestrian safety and accident prevention (Kabir, 2014; World Bank, 2007). Rapid urbanization process, high vehicular population, growth and mobility, inadequate transportation facilities and policies, varied traffic mix with over concentration of non-motorized vehicles, absence of dependable public transport system and inadequate traffic

management practices have created a significant worsening of traffic and environmental problems in the metropolitan Dhaka (R. MD. Islam & Hoque, 2018).



Figure 3.3: Rampant illegal parking and hawkers' possession on sidewalks freezes traffic
Source: (T. Khan, 2013)

According to Bangladesh Road Transport Authority (BRTA), the existing road network in Dhaka is not enough to hold the increasing number of vehicles. Possession of roads and sidewalks is a common problem in Dhaka. Street vendors, hawkers and street front shop owners occupy 60% of the 163 km footpaths of Dhaka city. Sometimes the sidewalks are filled with construction materials and wastes which make the situation worse (I. Islam et al., 2016). Pedestrians in Dhaka are the most vulnerable road users and unfortunately, they are the most neglected elements in the design of roadway features in Dhaka city. Inadequate sidewalks and expanding population have forced them to share carriageway with the vehicles. This has increased the number of accidents as well as contributed to further increasing the congestion of the carriageway. Unplanned haphazard land use, inadequate pedestrian facility and lack of attention to pedestrians in the traditional transport planning and traffic management have caused serious hazardous situations. All these factors make the transportation system of Dhaka a very complex one (R. MD. Islam & Hoque, 2018).

Organization of Transport Sectors

Bangladesh has four ministries responsible for transportation within country and they have specific responsibilities. They are- Ministry of Road Transport and Bridges, Ministry of Civil Aviation and Tourism, Ministry of Shipping and Ministry of Railways. The Ministry of Road Transport and Bridges contain two divisions- Road Transport and Highways Division, and Bridges Division. Again, Road Transport and Highways Division has four organization under it, they are- Dhaka Transport Coordination Authority (DTCA), Bangladesh Road Transport Authority (BRTA), Bangladesh Road Transport Corporation (BRTC) and Roads & Highway Department (RHD). These organizations are directly responsible for the transport system's improvement, management, and operation and enforcement activities of Dhaka city (Figure 3.4). However, most of these agencies have very old and obsolete sets of rules and regulations, which need immediate improvement with modern approaches. Moreover, these agencies lack proper coordination of responsibilities among them (*BD-Transport-Policy Note*, 2009).

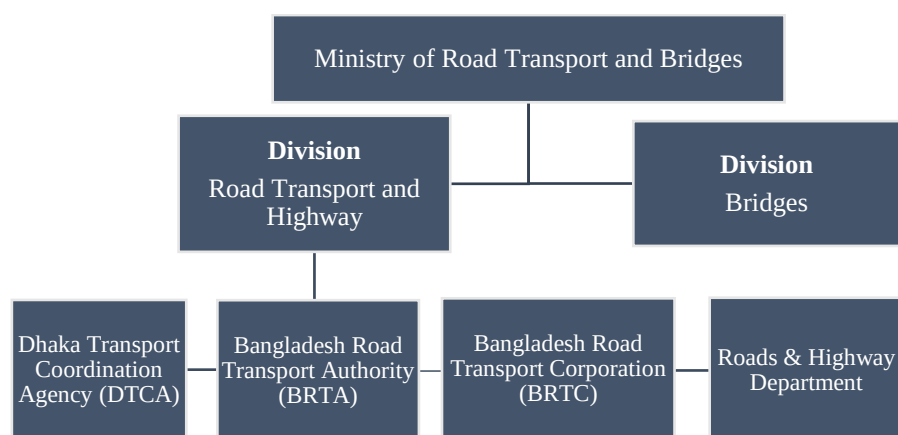


Figure 3.4: Administration framework of Transportation sector of Bangladesh shows the relationship between government and planning institutes

Source: (*BD-Transport-Policy Note*, 2009, Author 2019)

Dhaka Transport Coordination Authority (DTCA) is responsible for the coordination of the overall transport system of greater Dhaka; as well as to carry out research, policy planning, development of traffic and transport rules and regulation, training and co-ordination in the transport sector. Additionally, it has been mandated to plan and develop Mass Rapid Transport (MRT) or Metro system and the Bus Rapid Transit (BRT) system for the STP. Planning commission in Bangladesh is responsible for coordinating investment planning and main sectoral policies. The Roads and Highway Department (RHD) manages the first three tiers of Bangladesh's six-tier road network: national highways, regional highways and Zila roads (district roads), totaling over 13 thousand miles. The Bangladesh Road Transport Authority (BRTA) regulates road transport and collects fees from road users. BRTA operate and regulate inter-city road transport services for both freight and passengers. Bangladesh Road Transport Corporation (BRTC) is a semi-autonomous corporation under the Ministry of Communication. It operates bus services and provides both passenger and cargo transport services (*BD-Transport-Policy Note*, 2009).

Challenges in Transport Sector

The main challenges of the transport sector in Bangladesh result from inefficient allocation of resources, poor planning and inadequate policies influenced by political agendas. While the extended network has provided great benefit to the society by facilitating movement of people and goods, the long-term sustainability of the road network is still at risk. According to Transport Policy Note, appropriate institutional arrangements and sustainable financing mechanisms are not yet in place. Also, the major challenge is to keep up with the growing population of Bangladesh in providing adequate infrastructures. The quality of the road network is extremely poor, and roads are often too narrow for the traffic they carry. Congestion, overloading, air pollution and safety hazards are major problems in Bangladesh's

transport sector. The infrastructure system requires regular maintenance and upgrading which never happens. Delays in urban areas especially in Dhaka and main highway corridors continue to be major concern for users. However, the planning and selection of investment priorities for roads are key issues, as most decisions are made by headquarter-level managers with limited local knowledge. The planning process is further distorted by political influences and interests. Bangladesh being a country with dense land use and the flat terrain have advantage in supplying infrastructure; and with such advantages, a smaller share of GDP needed to spend to ensure connectivity to their population. For example, 1.5-2 percent may be adequate, if well allocated and sustained over time. If funds are added to clear the backlog of deferred maintenance, 2.5 percent of GDP may be reasonable budget to share, recognizing other priorities of Government funds. That said, Bangladesh faces the special challenges of financing certain mega-projects of long-term significance to the structuring of the economy, which are hard to reconcile with the regular budgets. For instance, the rail based mass transit network in Dhaka (MRT) being a debate in the sector (*BD-Transport-Policy Note*, 2009; Ministry of Communications, 2004; World Bank, 2007)

Existing Traffic problem in Dhaka

Dhaka has a population up to 19.8 million causing enormous pressure on the capacity of existing urban infrastructure and institutional improvements. Therefore, improvements to the efficiency of urban infrastructure and services are high government priority. Lack of measures and firm decisions to cope with the complexity and need of traffic control has created chaotic conditions in this city. The major share of road space remains occupied by small capacity vehicles which amplify traffic congestion, travel delays, and accidents in the city (Figure 3.7). In Dhaka, there are total 137 private bus companies operated, where the routes were never the result of any assessment of demand or proper planning in respect to

service optimization. These result in route overlapping, uncoordinated control of buses, no route commitment, and uneducated bus drivers which eventually lead to time waste, aggressive competition on roads, not following signals and so on. It is one of the very few megacities in the world without a proper public transport system (Alam, 2019; T. U. Chowdhury, Raihan, Fahim, & Bhuiyan, 2016; Mustaqeem, Jalaluddin, & Hassan, 2016). Lack of efficient public transport system and preference of door-to-door services influence the expansion of private cars in Dhaka (Alam, 2019).



Figure 3.5: Dhaka city with hundreds of bus companies and thousands of buses running in the crippling gridlocks
Source: (Hobbes, 2014)

Illegal car parking is a common scenario in Dhaka, and one of the reasons for congestion. According to the Director of Bangladesh Road Transport Authority (BRTA), only 10 to 15 percent people live in Dhaka who daily travel in private cars, but they occupy 85 percent of the roads. Bangladesh Road Transport Authority stated that Dhaka streets accommodate a total of 246,697 private cars at present. Added to that are around 5,000 buses and minibuses that are on the roads of public transport. (I. Islam et al., 2016). The railway was very popular means of transport, and it is still relatively cheaper and safer mode of transport in Bangladesh. But lack of proper initiatives and investments in the urban corridors could not lead or support the railway to play the expected role in Dhaka's public transport system. Furthermore, the rail tracks run through the Central Business Districts (or Downtowns) and

busy areas of the city with numerous level crossings which result in enormous congestion (BD-Transport-Policy Note, 2009). The city experiences a loss of around US \$2.4 billion per year due to traffic congestion and road accidents. The annual loss of fuel costs approximately US \$1.4 billion. In addition, 3.2 million business hours are lost every day, which is equal to approximately one hour per working person. The percentage of average capacity loss of roads in Dhaka is 12.19%, whereas the capacity loss due to on/off street construction have found to be 13%. On street parking causes more than 10% of loss of capacity. Water logging causes nearly 8% and poor maintenance contributes to about 7% of total capacity loss (Imran & Hossain, 2016). In addition to that, while the president, the prime minister or the ambassadors travel in between the city roads, the general traffic are stopped for long hours and consequently causing serious congestion (I. Islam et al., 2016).



Figure 3.6: Long queue of traffic in Dhaka
Source: (T. Khan & Mcips, 2013)



Figure 3.7: Small capacity vehicles (e.g. rickshaw, van etc.) impede the traffic flow and amplify traffic congestion

Source: (Alam, 2019)

All these factors have created a situation in Dhaka where cars and motorcycles are increasingly becoming a necessary for the people to get around in Dhaka. As a result, further congestion is observed in roads and worsening air and noise pollution and safety issues (Alam, 2019).

Policies in Transport Sector

Dhaka, being one of the most populous megacities in the world, is suffering from perpetual traffic congestion. Consequently, different transport policies regarding regulatory measures and construction related measures have been undertaken over the years to reduce the traffic congestion problem in Dhaka city. The Government of Bangladesh has prepared different transportation policies, not only to reduce traffic congestion but also to build a reliable transportation system for the city (R. MD. Islam & Hoque, 2018). The transportation policies prepared for the development of the transport system in Dhaka are-

- Greater Dhaka Metropolitan Area Integrated Transport Study (DITS), 1994
- Dhaka Urban Transport Project (DUTP), 1998
- National Land Transport Policy, 2004

- Strategic Transport Plan (STP), 2005
- Dhaka Urban Transport Network Development Study (DHUTS), 2010
- Urban Transport Policy, 2015
- Dhaka Structure Plan, 2015
- Revised Strategic Transport Plan (RSTP), 2016

The government's policy for the transport sector is stated in 'National Land Transport Policy' which was approved in April 2004. One of the policy objectives include improving the regulatory and legal framework of transport sector and it introduces an integrated multimodal transport system. Also, private sector participation in transport sector in Bangladesh is moderate compared to neighboring countries, due to lack of regulatory framework as well as government proactive actions to promote public-private partnerships in transport infrastructure financing and management (Ministry of Communications, 2004). Public expenditure in the transport sector was BDT 413 billion (\$6.7 billion) during fiscal years 2002-2003 to 2006-2007, which constituted about 2.2 percent of GDP. From the expenditure, 69 percent was allocated to development projects through the Annual Development Plan, and 31 percent was allocated to recurrent and maintenance expenditure through the Revenue Budget. According to World Bank in "Bangladesh Transport Policy Note", the budget preparation system directs adequate resources to roads, and rural road networks are well developed. Nevertheless, evaluation needs to be done to the overall efficiency in the use of resources allocated to transport sector and in particular, the widespread corruption takes its toll on the results achieved (*BD-Transport-Policy Note*, 2009).

There is existence of number of legal provisions for urban planning and building control in Bangladesh. Various laws, policies, acts, legal and administrative frameworks which are relevant and related to urban development are:

- Environmental Policy- 1992, Ministry of Environment and Forest, Bangladesh

- Motor Vehicle Act- 1984 (revised), BRTA, Bangladesh
- Environment Conservation Rules 1997, Government of Bangladesh
- Building Construction Act 1952
- The Town Improvement (TI) Act 1953
- Building Construction Rules 2008
- Bangladesh National Building Code (BNBC) 2006

Any infrastructure construction projects under these rules and legislations require to prepare Environmental Impact Assessment (EIA), Social Impact Assessment (SIA) and Traffic Impact Assessment (TIA). Unfortunately, very limited documents have been found for most flyover projects in Dhaka, and some have been found to be based on misleading assumptions overlooking the actual implications. More regretting fact is that these documents prepared by the consulting firm are not cross-checked by any of the authorized organizations. Most of the time, they gain approval without any physical site visit by experts, and these documents never underwent thorough post evaluation (Kabir, 2014).

Government Initiatives

The government of Bangladesh focused on smoothing traffic flows with the growing population densities and increased traffic demand, since the early stage of development. The concept of the construction of flyovers emerged from the very beginning of the Dhaka's first comprehensive urban transport study, the Dhaka Integrated Transport Study (DITS), which was commissioned by the Government of Bangladesh in 1992-1993, conducted under the Planning Commission and UNDP and reported in 1994. Recommendations were made mainly concentrating on the traditional elements of urban transport planning- developing road infrastructure, constructing flyovers, developing bus terminals and bus routes and improving

traffic flow management at intersections and across the road network. The study also recommended that if a congested roadway junction can be solved by a low-cost traffic management scheme, then there would be no need to construct flyovers at intersections (R. MD. Islam & Hoque, 2018). The government of Bangladesh formulated Strategic Transportation Plan (STP) in cooperation with World Bank in 2005 to improve the traffic situation and urban environment. The implementing agency is Dhaka Transport Coordination Authority (DTCA) under the Ministry of Communications (MoC). The STP prepared “Urban Transport Policy” for 20 years (2004-2024) and identified priority issues such as- improvement of mass transit system (buses and rail transportations), development of urban expressway and establishment of organization to implement and maintain the projects (Dhaka Transport Co-ordination Board, 2007). Some experts made an argument that STP was a controversial plan accepted by government despite receiving vigorous criticism and opposition from civic society and professionals (Akther, 2009). There were three strategies of STP to manage transport in Dhaka city. Under these strategies, there were eleven options proposed and considered to solve the traffic problems of Dhaka (Dhaka Transport Co-ordination Board, 2007).

The options were compared using eight objective functions including cost and eight subjective functions including affordability and social and economic development. Under base case option, it was assumed that the present scenario would continue with the existing projects which are at different stages of planning. There are 13 such projects and is identified as Roads. Under Roads+, 29 new roads were proposed in addition to those 13 projects, and under Roads ++ 37 additional new roads were proposed. In Roads+++, 10 elevated expressways or flyovers are proposed in addition to the 50 roads of Roads ++. The consultants stated that alternative 1a is the best followed by alternative 2a. These two alternatives propose neither subway nor flyover. Alternative 3d was determined to be the

worst. However, in the final commentary, they recommended alternative 2b as the solution of transport problem in Dhaka. It is a combination of BRT and Metro rail, and interestingly, even this alternative does not propose any flyovers. The best two alternatives were discarded by elected officials on a fragile excuse that they do not fulfill the need for improved road system. Ultimately, the government chose the flyover and subway which is either alternative 3b or alternative 3c; the worst of the proposals in terms of cost and affordability (Akther, 2009; Dhaka Transport Co-ordination Board, 2007).

Table 3.1: Options considered in STP and estimated cost for the implementation of proposed options

Alternative		Roads	Bus Rapid Transit (BRT)	Metro	Cost (Million US \$)
Base case		Roads	No BRT	No Metro	149.4
Alternative 1	1a	Roads+ (29 new roads)	All BRT	No Metro	2900
	1b	Roads + (29 new roads)	Partial BRT	Partial Metro	4900
	1c	Roads+ (29 new roads)	No BRT	All Metro	5500
Alternative 2	2a	Roads ++ (37 new roads)	All BRT	No Metro	3100
	2b	Roads ++(37 new roads)	Partial BRT	Partial Metro	5200
	2c	Roads ++(37 new roads)	No BRT	All Metro	5800
Alternative 3	3a	Roads +++ (10 flyovers and 50 roads)	All BRT	No Metro	4200
	3b	Roads +++(10 flyovers and 50 roads)	Partial BRT	Partial Metro	6300
	3c	Roads +++(10 flyovers and 50 roads)	No BRT	All Metro	6900
	3d	Roads +++(10 flyovers and 50 roads)	No BRT	No Metro	3200

Source: (Dhaka Transport Co-ordination Board, 2007)

After the STP proposal and before selection of the alternatives, the optimal transport network plan in 2025 is evaluated in Dhaka Urban Transport Network Development Study (DHUTS) report prepared by Japan International Cooperation Agency (JICA), based on the results of prioritization of STP proposal on MRT system. DHUTS selected scenarios from alternative

transport proposals from STP (Table 3.2). Four alternative transport network development scenario setting have been proposed in the study- Do Nothing, Do Minimum, Do Medium and Do Maximum (Dhaka Transport Coordination Authority, 2016). The “Do Minimum” scenario was recommended in DHUTS based on the evaluation on traffic aspect, system efficiency and economic and financial perspectives. This scenario is composed of- construction of Mass Rapid Transit Railway (MRT) line 6, upgrading of existing Bangladesh Railway (BR), and Bus Rapid Transit (BRT) line 1 to 3 (Dhaka Transport Coordination Authority, 2016). The proposed mass transit network map is provided in Appendix A. The study identified flyover projects as very urgent, as they believed that these projects would be helpful in mitigating chronic traffic congestion and remove roadway intersection bottlenecks and have no special problems for implementation (Rahman, 2017).

Table 3.2: Transport network scenarios proposed from Strategic Transport Plan

Scenario	Traffic Efficiency	System Efficiency	Economic/Financial Aspects	Overall Evaluation
<u>Do Nothing</u> : No special projects	-Average travel speed= 4.2 km/h	-No passenger load -Trip length= 16.5 km -Travel time= 49 min	Due to no investment cost required, no financial burden is necessary, but wrong impact on Dhaka’s economy	As transport network in 2025, it is not recommended due to high traffic congestion
<u>Do Minimum</u> -MRT Line 6 -Upgrading Bangladesh Railway -3 BRT lines -Urban Expressway (flyover)	-Average travel speed=14.1 km/h	-Passenger load= 196,000 passenger/km -Trip length= 16.5 km -Travel time= 15 min	Average fare revenue= 552,000 BDT/km (\$6,578.46/km) -Efficiency of investment cost= 15,400 BDT (\$183.53)	As transport network in 2015, it is recommended due to minimum investment while effects being more or less same

<u>Do Medium</u> -MRT line 4,5 and 6 -3 BRT lines -Urban Expressway (flyover)	-Average travel speed= 14.5 km/h	- Passenger load= 183,000 passenger/km -Trip length= 14.9 km =Travel time= 14 min	-Average fare revenue= 548,000 tk/km (\$6,530.79/km) -Efficiency of investment cost= 7,750 tk (\$92.36)	As of transport network in 2025, it is recommended as second-best plan
<u>Do Maximum</u> -MRT line 4,5 and 6 -MRT line 7 \$ 8 -3 BRT lines -Urban expressway (flyover)	-Average travel speed = 14.9 km/h	-Passenger load= 139,000 passenger/km -Trip length= 15.4 km -Travel time= 14 min	-Average fare revenue = 383,000 tk/km (\$4,564.40/km)	As transport network in 2025, it is not recommended due to high investment cost

Source: (Dhaka Transport Coordination Authority, 2016).

On contrary, Dhaka Structure Plan (2015) identified the construction of flyovers and other road infrastructures as a threat to the development of the future transportation road network in Dhaka. It is because they are not integrated with the overall road network development plan. Therefore, Dhaka Structure Plan (2015) recommended an integrated approach with consideration of multimodal transport facilities (BRT lines, MRT lines, ring road and elevated expressway) before undertaking the construction of flyovers in Dhaka (Rahman, 2017).

The original STP was then revised in 2016, which was approved by the Roads and Highway Division (RHD) at the Cabinet meeting. The Revised Strategic Transport Plan (RSTP) has been drawn with an integrated transport plan for the next 20 years with a short term (2015-2020), middle term (2020-2025) and long term (2025-2035) policy to ensure a disciplined road and transport system for Dhaka (Mamun, 2016). It aims at building large scale infrastructures, including five metro rails (MRT), two bus rapid transit routes (BRT), circular ring roads, eight radial roads, six elevated expressways and twenty-one transportation hubs

and circular waterway project with timeline of implementation from 2015 to 2035 (Dhaka Transport Coordination Authority, 2016). But again, the inclusion of this projects have no part in the extensive network of flyovers made people wonder why the flyovers were approved in the first place, wrote Daily Star (renowned newspaper in Bangladesh) (Devnath, 2017).

Experts are claiming that Dhaka's congestion is very severe because less than 25% of land is occupied by road. London and many major cities of Europe have less than 15% of land as road space, though these cities do not suffer such severe congestion because public transport and transit dominates their transportation system. On the contrary, Los Angeles has more than 30% land as road space but is considered one of the most grid locked cities in the world. So, increasing share of road by building expressways and flyovers as a percentage of land space is not necessarily justified (Akther, 2009).

Flyover Projects in Dhaka

The concept of the construction of flyover emerged from the very beginning of the Dhaka's first comprehensive urban transport study, Greater Dhaka Metropolitan Area Integrated Transport Study (DITS). Recommendations were made mainly concentrating on the traditional elements of urban transport planning, developing road infrastructure, constructing flyovers, developing bus terminals and bus routes, and improving traffic flow management at intersections and across the road network. Then some transportation policies at that time identified potetial locations (Jatrabari intersection, Sonargaon intersection, Mohakhali and Airport road/Gulshan 1 road intersection, and Malibagh rail crossing intersection) for the construction of flyovers to improve roadway intersections, whereas other policies recommended for overall road transport network development, and there were no specific

guidelines for construction of flyovers in Dhaka. Roads and Highway Department (RHD) also recommended the construction of the first flyover of Dhaka- Mohakhali flyover as a part of Dhaka Urban Transport Project plan (DUTP) in 1998 (R. MD. Islam & Hoque, 2018; Roushan, 2013). In the year 2004, government built the first flyover at Mohakhali intersection. It was built by Metallurgical Construction Limited, a Chinese firm, under the World Bank funded Dhaka Urban Transport Project and responsible agency for the implementation was Roads and Highways Department (RHD). The flyover was 1.12 km, four lane and the cost of the total project was BDT 116 crore (14 million USD). The second flyover was built at Khilgaon in 2005. The 1.9 km, two lane flyover was made completely by the local experts- Development Construction Limited (DCL) and the Local Government Engineering Department (LGED). The flyover has been constructed at a cost of about BDT 81.75 crore (10 million USD). The third construction, Banani Overpass has been built in 2012 and proved to be most successful in segregating traffic to above-grade facilities (80% segregation), while remaining flyovers have poor performance in enhancing mobility in the city. After that, several large and small ad-hoc flyovers were constructed in ten years at different intersections of Dhaka (Kabir, 2014; Taleb & Majumder, 2012). The latest completed flyover is Moghbazar-Mouchak Flyover project. The purpose of this flyover is to facilitate north-south traffic movement of Dhaka by increasing the traffic carrying capacity of major eight road intersections and two rail intersections. The total length of the flyover is 8.25 km, and the total cost of the project was 143.47 million USD. The flyover work started from 2011 and opened it in parts in different years, finally completely opened in 2017 (Devnath, 2017; Local Government Engineering Department, 2009).

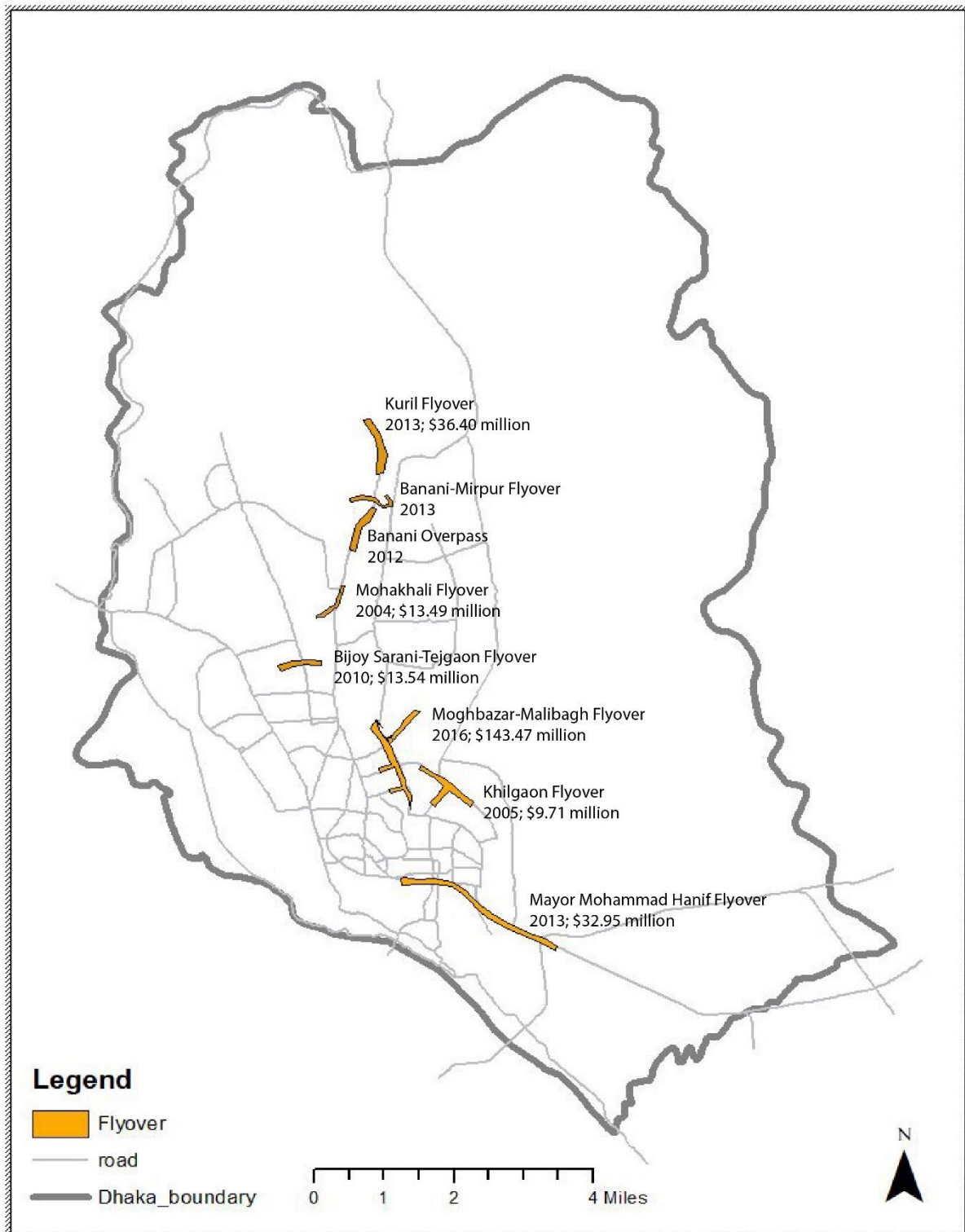


Figure 3.8: Location of eight flyovers built in Dhaka Metropolitan Area

Source: Author, 2019



Figure 3.9: Mohakhali flyover, the first flyover built in Dhaka in 2004 (left); Khilgaon Flyover, built in the next year of Mohakhali flyover, in 2005 by local experts (right)

Source: (Hasan, 2019)

Kabir (2014) stated on her research article that political leaders and city officials in Dhaka city developed their own visions of flyovers to speed cars to their destinations, bypassing the monstrous traffic jams that blocked major intersections (Kabir, 2014). Nonetheless, the resultant scenarios of these flyovers are very concerning (Figure 3.8). Islam and Hoque (2018) did a performance evaluation study of the flyovers built in Dhaka and the assessment of classified vehicle data revealed the degree of effectiveness of these flyovers. Modal assessment in the flyovers revealed that all of them have evidently failed to provide any facilities to non-motorized vehicles and instead leaned toward private car and small sized vehicles. Only Mayor Mohammed Hanif Flyover which is the 7th flyover built in Dhaka (Figure 3.11), have been observed to provide maximum usage to the public transport (48% public transport) while remaining flyovers are performing very poorly to serve the public transport. Assessment of queue length and accident data revealed that, Khilgaon flyover, 2nd flyover built in Dhaka (Figure 3.10) has shown maximum queue length (882 m) and Hanif flyover (Figure 3.11) has shown highest increase in congestion rate (168% within last two years). Assessment of travel speed and free flow speed revealed that Banani Overpass (4th built in Dhaka) has been proved to be most successful in facilitating mobility (R. MD. Islam & Hoque, 2018; Kabir, 2014).



Figure 3.10: Moghbazar-Malibagh Flyover, completely opened in 2017

Source: (Dhaka Tribune, 2018)

Despite the labor and construction materials being relatively cheap in Bangladesh, these flyover constructions projects are more expensive and take longer time to implement than in any other South Asian city. One kilometer (0.62 miles) of a four-lane flyover costs an average of BDT 123 crore (\$14 million) in Bangladesh, whereas as in India, it is BDT 100 crore (\$11.83 million) and in Pakistan BDT 70 crore (\$8.28 million) (Tusher, 2016).

Experts think the reason for the delays and high cost would be contractor's negligence, improper planning and feasibility studies, lack of accountability and transparency. Also, land acquisition, rehabilitation of people, finding financiers, legal and bureaucratic tangles also the reason for the unnecessary delay (Taleb & Majumder, 2012). Former caretaker government adviser of Bangladesh, Hossain Zillur Rahman, stated that the costs of such projects become higher mainly because of inefficiency and corruption. One inefficiency is institutional corruption and the other is implementation ineptitude (Tusher, 2016). The flyover planning

processes in Dhaka are still dominated by political biases and tools, assumptions, methods and instilled human behaviors of first highway-construction era. Several mega flyover projects are on the pipeline as a potential answer to Dhaka's congestion problems and some of them are implemented as a quick solution without undertaking any feasibility study. Ad hoc flyover projects were disparately and incoherently laid out by different government ministries with divergent interests (Kabir, 2014).



Figure 3.11: Plan after plan, but no solution to traffic congestion, image from Khilgaon flyover

Source: (Mamun, 2017)



Figure 3.12: Highest queue length and increase of congestion rate in Hanif Flyover

Source: (*New Nation*, 2017)

Flyover Disputes in Media

There have been regular writings on various local newspaper on the controversial construction of flyovers and its negative impacts on the city. Transport experts of Dhaka said that these mega structures are not only the waste of money of the taxpayers of this country, but also an irreversible damage for the city. They think flyover as a wrong approach to consider a solution to gridlock, rather the city needs to focus on ensuring the better use of roads, waterways and railways to resolve the vexing problem. Dr. Shamsul Haque, a prominent transport expert of Dhaka stated that flyovers in Dhaka are increasing traffic instead of reducing the congestion and will probably have to be demolished in near future (Prothom Alo, 2015). He said in other renowned newspaper “Daily Star” that, the flyovers are not sustainable solution, rather an irreversible damage narrowing the prospect of MRT (metro rail) system inside the city. Experts are saying that the solution to Dhaka’s escalating traffic congestion should be focused more on public transport (Devnath, 2017). So, the question arises that why government of Bangladesh is spending millions of dollars on

building flyovers which will eventually have to be demolished. This phenomenon led to the main research question of the study.



Figure 3.13: Vehicles remain stuck in tailbacks on and under the newly-opened Moghbazar-Mouchak flyover near New Eskaton around 6:30pm

Source: (Devnath, 2017)

Civil societies and personnel highly criticized the flyover construction and how it was affecting the overall livability of cities. Many experts said that the flyovers in Dhaka contribute to traffic congestion because of faulty design and short-sighted planning, even though flyovers were presumed to be effective in first place in reducing travel time (Figure 3.13). Most of the flyovers opened recently, have been off-ramped at intersections, which are bringing vehicles converging to a traffic stop instead of going over it (Figure 3.14). It is practically visible in the city how flyovers are causing congestion when the road capacity is full during peak hours and if the volume of vehicles travelling during that time is greater than the capacity of the flyover, which has consistently been the problem with the flyovers in Dhaka (Mamun, 2017).

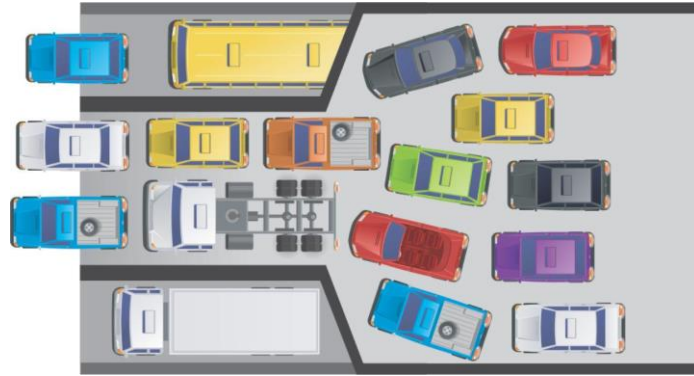


Figure 3.14: This graphical presentation shows how vehicles from multiple lanes of the flyover merge into one lane at the off-ramp and join crawling traffic below.

Source: (Devnath, 2017)

The flyover construction of Moghbazar-Malibagh had drawn constant public wrath for torn roads and traffic mismanagement underneath. This flyover has been built on some major intersections of the city, where the construction work began without providing alternative routes for the existing massive traffic. The project site was then stained with multiple accidents and onsite casualties (The Daily Star, 2017).

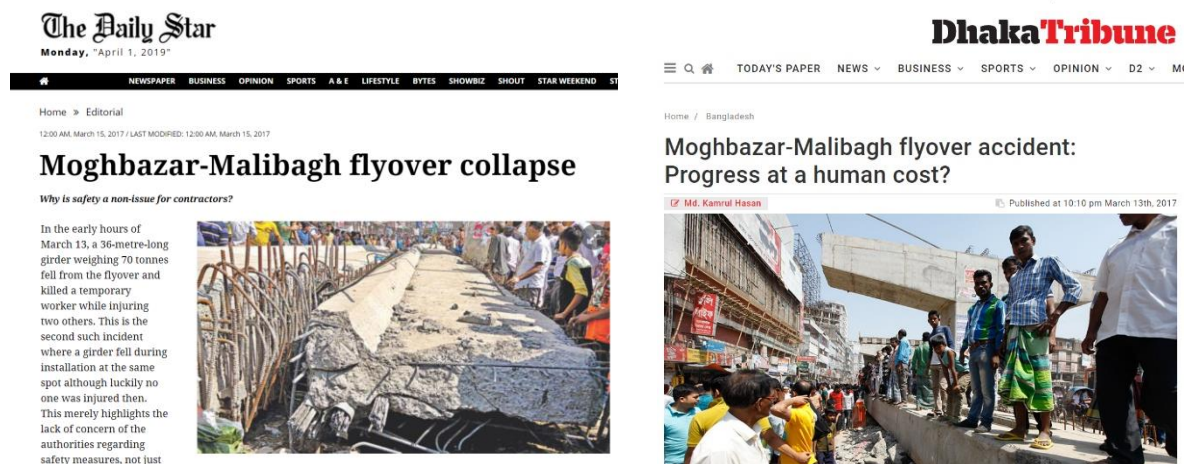


Figure 3.15: Newspaper articles on accidents and casualties during the construction work of Moghbazar-Malibagh flyover

Source: (M. K. Hasan, 2017; The Daily Star, 2017a)

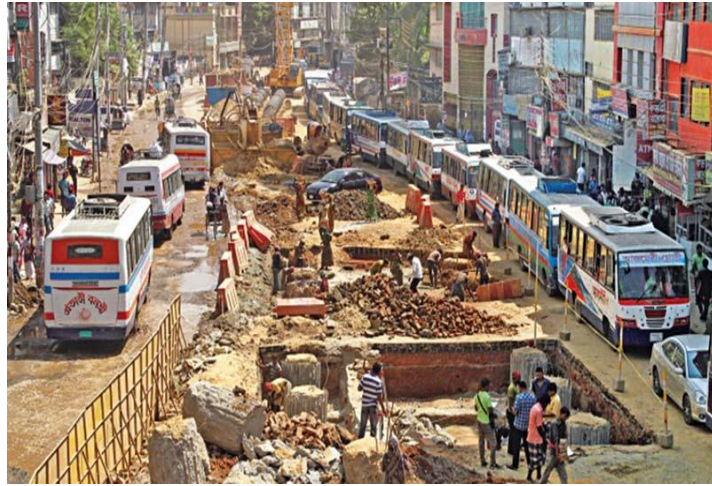


Figure 3.16: Construction of Moghbazar-Malibagh flyover started without providing alternative route for vehicular traffic

Source: Author, 2018

An online newspaper of Bangladesh published an article stating that flyovers are curse on cities like Dhaka, which are built for financial benefit to some. A renowned intellectual in Bangladesh commented on the newspaper that many cities in the world are tearing down the flyovers and Bangladesh will also have to dismantle them at some point, so no point of constructing them now by spending millions. He claimed that flyovers in developing country means money, as the project cost is raised from BDT 2 billion to BDT 20 billion. A smidgen of this money in someone's pocket means a huge amount, he added (BDnews24.com, 2019).



Figure 3.17: Traffic gridlocks still exists on streets while Moghbazar-Mouchak flyover remain unused

Source: (Dhaka Tribune, 2018)

Moreover, flyovers are reducing the rights-of-way (ROW) of the street by randomly placing the pillars considering the utility lines along with several unnecessary dividers forcing traffic to slow down. It creates a massive problem, especially when in Bangladesh the biggest problems seem to be the tragedy of the commons-where one acts for himself instead of the common good. The fact is applicable when people only use 10% to 20% of ROW because they do illegal road side parking, random bus stops in the middle of the street and mismanaged lanes. The moving speed of them has already been impeded for these reasons, and flyovers added to that list now. Dhaka Metropolitan Police's (DMP) Joint Commissioner of Traffic told Dhaka Tribune (newspaper) that the flyovers of Dhaka function more like ramps transferring congestion from one place to another, than reducing the travel time. It is due to adding the flyovers into the system without proper traffic management, or designated lanes for certain vehicles and without proper public transport system and rapid mass transit system (Mamun, 2017).

The most concerning issue is, these flyovers are blocking the potential development of long-term transportation plan. According to a senior staff reporter of "Daily Star", it is a disappointing fact to know that the much-hyped BRT route will practically cover only a 10 km (6.21 miles); where it was planned to cover 22 km (13.6 miles) of road to ease the traffic congestion of Dhaka city. He added,

"The reason why only half of our sustainable goal is implementing because a number of arbitrarily built flyovers are blocking the BRT and MRT proposed routes."

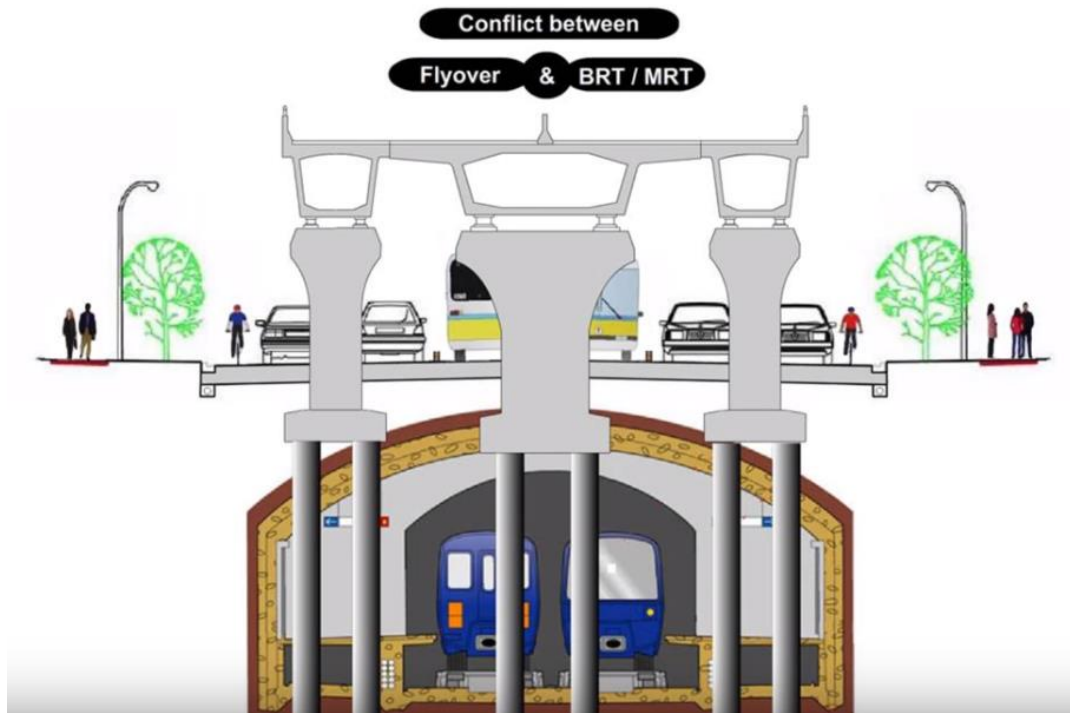


Figure 3.18: Flyovers are impeding the potential of sustainable solution for Dhaka
 Source: (TEDx Talks & Hoque, 2017)

The Metro rails will go underground for most of the routes, but still it can't be constructed due to the foundation pillar of flyovers on those routes (Figure 3.18). In Revised Strategic Transport Plan (RSTP) many projects are being proposed to solve the congestion of Dhaka, which are feasible and sustainable for the city but the time to review these projects take longer. There is no coordination among government agencies, and flyovers are being implemented in a haphazard manner by ad hoc agencies. For instance, RAJUK is the Capital Development Authority of the Govt. of Bangladesh, a public agency responsible for coordinating urban development in Dhaka, not in authority of doing transport infrastructure decisions and implementation responsibility. But the responsibility of the entire Mohakhali flyover construction was RAJUK. In this way, the flyovers are building in Dhaka even though they weren't originally proposed or mentioned in the plan. As a result, most of the flyover projects are haphazard and uncoordinated (Akther, 2009; Devnath, 2017).

Despite having eight flyovers and overpasses, Dhaka will still struggle to negotiate its vexing traffic congestions and soon these mega structures will turn into a large burden for the city and its people in years, experts shared their concern in Prothom Alo, a daily newspaper of Bangladesh. They said the traffic gridlocks can be reduced by ensuring the efficient use of existing roads, rail and waterways with better plans with sustainable solutions and projects without building flyovers and overpasses. Government of Bangladesh need to come up with a strong traffic demand management policy, whereas flyovers and overpasses are supply solution creating its own demand. Flyovers stirring more vehicle use in the city, thus aggravating the overall traffic problem (Prothom Alo, 2015).

Chapter 4 - Methodology

This portion involves a detailed discussion of research methodology and how the research has been conducted. It is a qualitative research which followed a grounded theory method. This inductive method used to reach to the root causes of flyover construction projects in Dhaka, which is the primary research question of this study. This method consisted of two approaches: content analysis and interview. First, content analysis of Strategic Transport Plan (STP), Revised Strategic Transport Plan (RSTP), Bangladesh Transport Policy Note and other policy documents of Ministry of Communications and Dhaka Transport Coordination Authority (DTCA) were conducted. Second, the policy makers, stakeholders of the flyover construction projects, civic society and other professionals were interviewed. Interview questions were informed by research questions, literature reviews, and the results of content analysis. This research is directly related to human behavior and their perception. For this reason, prior to embarking on research, all required documentation was submitted to the Institutional Review Board (IRB) for review.

Content Analysis

The content analysis of policy documents of Ministry of Communications and Transport studies was conducted. These documents include Strategic Transport Plan (STP), Revised Strategic Transport Plan (RSTP), Bangladesh Transport Policy Note, The National Land Transport Policy, Dhaka Urban Transport Plan (DUTP), Dhaka Urban Transport Network Development Study (DHUTS) and Dhaka Structure Plan. Interview questions and findings were highly influenced by content analysis, in other words data obtained from content analysis were used to support the findings from the interview. From that, the underlying theory was formulated which was grounded in the textual data (Corbin & Strauss, 2014). In summarize, the objective of doing content analysis in this research was-

1. To get the comprehensive background of transport sector and flyover projects of Dhaka
2. Identify the potential interviewees and build interview questions and discussions
3. To support findings of the research

Interviews

Initial Purposive Sampling

The interviewees were identified through literature review and professional connection, and snowball sampling method. Snowball sampling method was done as subjects who are involved with the decision making and implementation of flyover construction project are unknown (Fink, 2016). The preliminary interviewees were selected from different organizations involved in the process started from decision making to implementation of flyover construction project in Dhaka. This purposive sample was designed to provide wide and different perspectives of the participants on the issue of flyover construction in Dhaka. The initial participants included transportation professionals, policy-makers, faculty and consultants in Dhaka. After the IRB approval, formal e-mails were sent to the participants, inviting them to participate in this qualitative study. The interviews started with the participants who responded to the invitations.

Interview session 1

For the initial interview, two personnel from public transport agencies and two faculty and transportation experts were interviewed. Interview questions were semi-structured with open-ended questions; some portion were left open as it might explore or find additional questions raised during the interview (Bryant & Charmaz, 2007). Interviews were digitally recorded and translated into English. The duration for interview were 40-60 minutes, the duration

depended on the conversation and the availability of the participant. The interviewees were notified about the protection of their identity in all publications related to the research. Each week two interviews were conducted to accommodate time for memo writing and data analysis after each interview. Coding and memo-writing occurred simultaneously with each interview. After initial interviews, theoretical sampling was conducted to sample next participants. Total fourteen interviews were taken in this study, so in total it took seven weeks to complete the interview.

Interview session 2

The next interview session was highly influenced by the initial interview and analyzing the data obtained from the participants. Also, different group of participants were selected to have a diverse and different perspective on the issue. This interview session included a transportation consultant and an urban planner from the City Office, a researcher on transport system in Dhaka and a newspaper reporter. Memo-writing and initial coding were done concurrently after each interview. The data collected from the interview were more detailed and informative comparatively, from a technical standpoint, as well as neutrality. Again, theoretical sampling was done after these interviews, to fill the gap by modifying the questions asked in data collection, and carefully selected participants. Theoretical sampling in this stage helps to clarify uncertainties, test interpretation and build emerging theory (Bryant & Charmaz, 2007).

Interview session 3 and 4

The interviews themselves progressed over time after theoretical sampling and the conversations tend to focus more on the larger concerns touched on by previous participants. The advantage of taking interviews alongside with memo-writing and initial coding was

using some phrases from previous interviews to spur respondents to think more deeply, more thoroughly or to reach to a specific point. In this session, an urban planner and a transport consultant from City office were interviewed. Data collected from these interviews were observed to be quite similar from previous respondents, which was an indicator of theoretical saturation. But, one more session of interview was needed to achieve an adequate saturation point. Content analysis and theoretical sampling led to select a traffic engineer and consultant, who directly worked in several flyover projects in Dhaka. Also, another news reporter was interviewed to get a different perspective.

Analysis

Grounded theory is a way to reveal the implicit, unrecognized and unknown picture of a society or environment. The fundamental components of grounded theory are: Memo-writing, Coding and Comparing, Theoretical sampling, Theoretical saturation and Production of theory (Bryant & Charmaz, 2007).

Memo-writing

Throughout the process of data collection and analysis, the researcher kept a written record of theory development. Memos can be events, cases, categories or relationships between categories. Memos are used to stimulate and record the analysts' developing thinking, including the comparisons made (Glaser & Strauss, 1967). Memos are an important part of grounded theory method. Memos provide information about the research process and also about the substantive findings of the study (Corbin & Strauss, 1990).

Coding and Comparing

The data analysis in this process relies on coding, which involves breaking down the data into much smaller components. Then, each component must be labelled and each element of data and each case compared to understand and explain the variation in the data (Bryant & Charmaz, 2007). Codes were eventually combined and related to one another as abstract categories or concepts (Glaser & Strauss, 1967). During an interview analysis, the researcher should be conscious of the words and phrase the interviewee is using and should note and describe in a short phrase which are issues of importance or interest to the research. This process is called coding (Allan, 2003). Strauss and Corbin (1990) have described some guidelines for coding data in a grounded theory analysis, they are Open Coding, Axial Coding, and Selective Coding.

Initial Coding: This is the process of breaking down, examining, comparing, conceptualizing and categorizing data (Ke & Wenglensky, 2010). In this stage, “indicators” were developed through open coding from the raw interview data.

Focused Coding: It involves assembling the data in new ways after open coding. It is then developed which- i) identifies a central phenomenon, ii) explores casual conditions, iii) identifies the context and intervening conditions, iv) specific strategies, v) delineates the consequences (Ke & Wenglensky, 2010). “Concepts” were developed by initial coding from the indicators gathered in earlier stage.

Theoretical Coding: It involves the integration of the concepts in the focused coding model. In this phase, hypothesis or conditional propositions are presented generally. A

substantive-level theory is developed because of this process of data collection and analysis (Charmaz, 2006). The three types of coding are not necessarily exclusive; they can overlap.

Theoretical Sampling

Theoretical sampling is central to grounded theory design. It is informed by coding, comparison and memo-writing (Glaser & Strauss, 1967). This involves collecting further data related to categories that emerged from earlier stages of data analysis. Analysis raises questions, suggests relationships, highlights gaps with the existing data set, and reveals what the researches may not know yet. Participants need to be selected carefully and questions asked should be modified in data collection. In this stage, researchers fill the gaps, clarify the uncertainties by testing interpretations, and build their emerging theory (Charmaz, 2006). In this research, theoretical sampling was largely influenced by the initial interviews taken. The participants informed about the organizations and professionals that influenced or related to flyover construction projects in Dhaka.

Theoretical Saturation

The success of theoretical sampling lies in reaching “theoretical saturation”, the point at which no additional data or concepts are emerging to enable the researcher to develop further properties. Saturation refers to all the concepts being developed and well understood as well as relatable to the data (Glaser & Strauss, 1967). Ideally, the process of data collection and data analysis continues until theoretical saturation has been achieved. Point of saturation is indicated when repeated instances of similar data emerges, and that point data collection in that area is completed (Corbin & Strauss, 1990). In this study, theoretical sampling was done through selection of institutions related to transport infrastructures and professionals from the data collected by initial interviews.

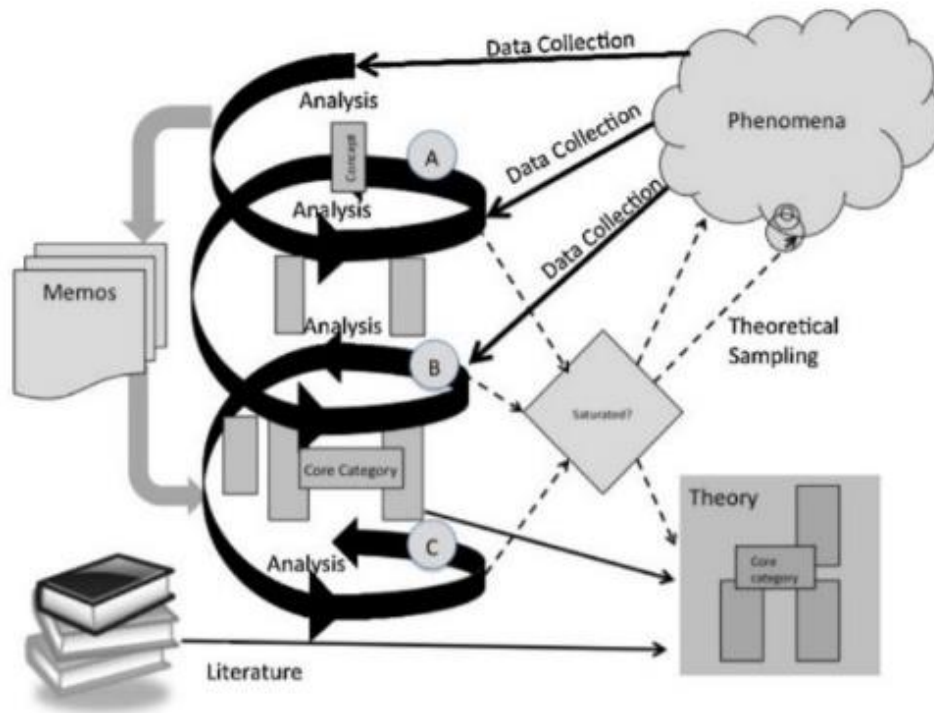


Figure 4.1: A graphical presentation of Grounded Theory approach

Source: (Charmaz, 2006)

Production of a Substantive Theory

The results of a grounded theory study are expressed as a substantive theory, a set of concepts related to one another in a cohesive way. A researcher reaches this step when he is convinced the analytic framework form a systematic substantive theory, a reasonably accurate statement of the matters studied, and is generated in a form that can be replicated. At this point, a theory has been developed and the researcher can publish the results (Ke & Wenglensky, 2010). A comparative scenario of two types of research approach- the traditional logic-deduction approach and grounded theory approach is following.

The methodology of this research is graphically illustrated below:

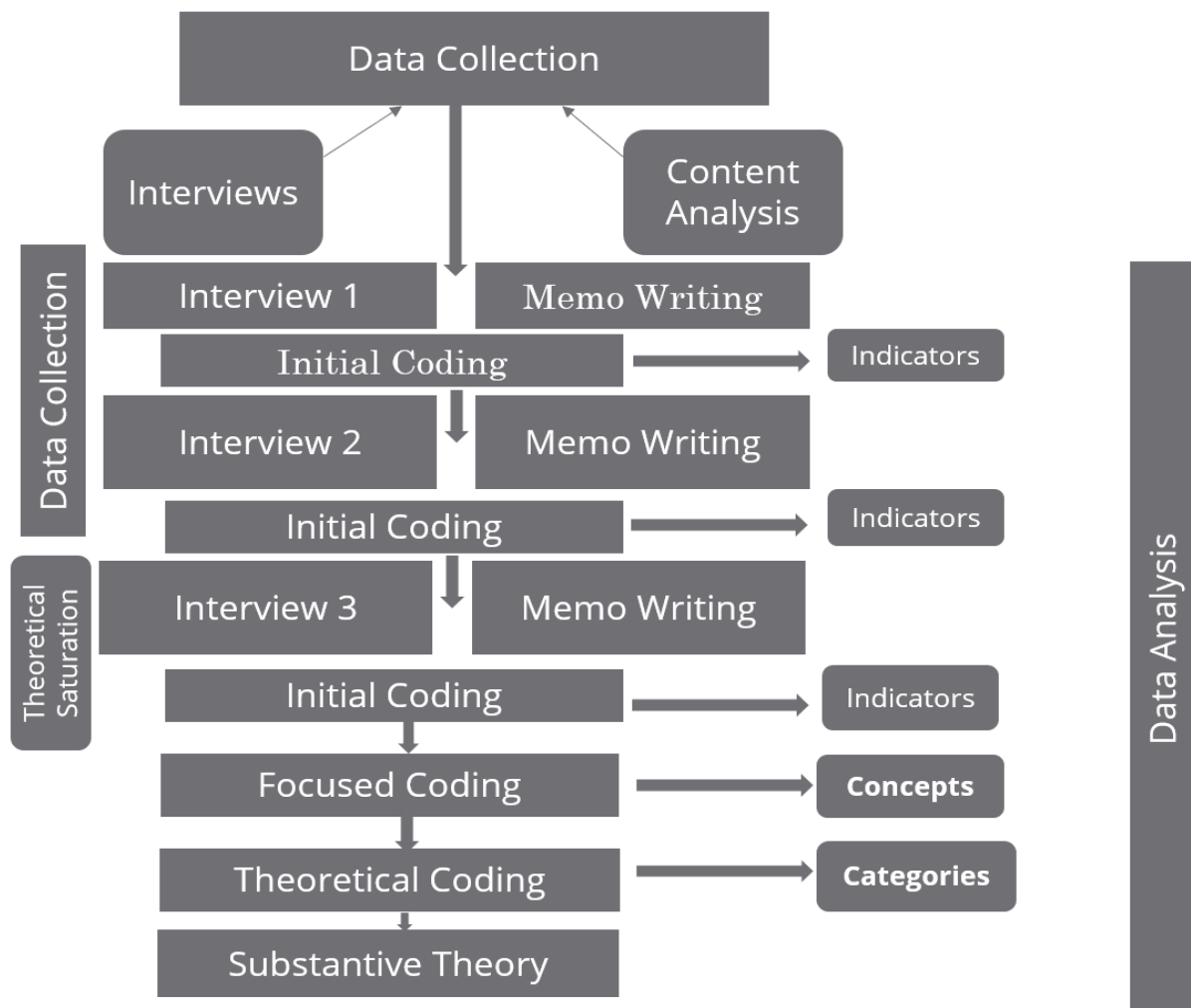


Figure 4.2: Methodology of the research

Source: Author, 2017

Chapter 5 - Data Analysis and Findings

Initial Coding

The initial or open coding uses ‘indicators’ - which are phrases or statements from the data to develop ‘concepts’ for the next step. These indicators are constantly compared against each other until a theoretical saturation is reached. Researcher tried to involve more diverse participants to get different perspectives and comprehensive overview of the issue, and once the data obtained becomes repetitive, it indicates the saturation point is reached. Strauss (1987) in his GTM research stated, the more detailed the analysis the less the chance of missing categories, and the greater the chance of discovering appropriate categories and reaching saturation. From all the interview data and case-based memos, 40 indicators have been sorted out that answer the research question. The following table is the extensive list of the indicators collected from the 14 interviews.

Table 5.1: Indicators extracted from the raw interview data through initial coding

Reasons for Flyover construction in Dhaka (Indicators)
1. Weakness in STP 2. Incompetent policy makers 3. Overlooking the impact study of infrastructure on surrounding neighborhood
4. Lack of accountability 5. Project goal doesn't meet after implementation 6. Decisions made on political grounds, not technical ones. 7. Project Plans doesn't comply with Revised STP
8. Top down approach decision making/ Cabinet decision making 9. Flyover is not a solution, rather a transfer of congestion from one place to other 10. Weakness in STP 11. Flyover – short term and quick solution 12. Less funding than MRT/BRT 13. Contradiction in agencies
14. Priority given from Cabinet 15. Inadequate funding 16. Prolonged Feasibility Study 17. Loose organizational framework
18. Complex dynamics of feasibility study 19. Lack of modern technology for large infrastructure 20. Govt accepted immediate, short-term cheaper policy 21. Flyovers were mentioned as Overpass in STP, changed to flyover by RAJUK 22. Opposition between cabinet and transport agencies 23. Poor forecasting

24. MRT and Flyover projects not relevant to the socio-economic context of Dhaka 25. Top level decision-making approach 26. Ineffective administration 27. Creating more inequality 28. Poor forecasting
29. Lack of vision for sustainable transport 30. Showcasing government development
31. Policy makers prioritize car-oriented infrastructure 32. Poor Planning activity 33. lack of sustainable vision by the policy maker
34. Disregard to expert advice 35. Ineffective organizational and administrative framework 36. To gain more political support and popularity
37. Budget limitation 38. Land unavailability 39. No co-ordination among agencies 40. Prolonged feasibility and technical studies

Source: Author, 2018

Focused Coding

In focused coding, a selected set of central codes emerge from the entire dataset and the study. It requires decisions about which initial codes or indicators are most related or prevalent to the research question, and which contribute to the analysis. From 40 indicators that emerged from the raw data through initial coding, six focused codes are selected to begin the analysis process.

Table 5.2: Concept developed in focused coding stage

Concept Developed	Number of codes
1. Top-Down Decision-Making Approach	8
2. Weak Strategic Transport Plan	7
3. Quick and short-term solution	14
4. Weak Governance and Regulatory Framework	9
5. Limited Budget and Technology	7
6. Show-casing development of government	7

Source: Author, 2019

These focused codes are also called concepts, as many indicators from the data formed one common concept. After the interviews, there were a large amount of data and many initial

codes. These included the group of indicators that represents the reasons why flyover construction projects are being implemented in Dhaka. From the large number of indicators, six broader concepts are developed in focused coding stage.

Concept 1: Top-Down Decision-Making Approach

Table 5.3: Concept 1 developed from 8 Indicators derived from Initial Coding

Indicators	Concept 1
1. Decisions made on political grounds, not technical ones	Top-Down Decision-Making Approach
2. Top-down organizational framework	
3. Cabinet decision making	
4. Priority given from Cabinet	
5. Opposition between Cabinet and Transport Agencies	
6. Top level decision making	
7. Creating more inequality	
8. Disregard to expert advice	

Source: Author, 2019

The policy making process in Bangladesh generally involves four primary local sectors- 1) politicians, 2) bureaucrats, 3) businesses (private sector) and 4) NGOs/ civil society organizations/ citizen groups etc. The central cabinet is the highest policy making body in Bangladesh like many other parliamentary forms of government. Thus, the cabinet is the ultimate authority for approving a policy and all policy-related issues must be approved by it (Shakil, Sharna, Noman, & Hridi, 2016).

Dhaka Transport Coordination Authority (DTCA) is the main government agency responsible for public transport in Dhaka and under Revised Strategic Transport Plan (RSTP) any

projects or changes to projects of transport infrastructure will need approval from the Dhaka Transport Coordination Authority. But many of the transport infrastructure decisions come directly from the Cabinet, and it was revealed in interview that sometimes DTCA has to approve some infrastructure projects by Cabinet's order, even though the project does not conform to all criteria or requirements by Strategic and Revised Strategic Transport Plan (STP & RSTP). Especially DTCA was against some of the flyover projects, as they don't meet the vision of RSTP, but eventually they had to approve some of those proposals by the direct command from the top. Therefore, it looks like the decisions of the controversial flyovers have been made on political grounds and not technical ones. Politicization has been a negative culture in Bangladesh. Thus, the entire bureaucracy is left to be inefficient and demoralized. Policy making in Bangladesh cannot be described as a linear process, rather often policy is discovered to be made after the decisions have been taken or other options eliminated through "political positioning of key players" (Shakil et al., 2016).

Concept 2: Weak Strategic Transport Plan

The National Land Transport Policy was adopted in 2004, which does not explicitly mention construction of flyover in their stated vision and goals. In section nine of the policy, it was stated that bus service and pedestrians would be given priority, and commuter rail would be introduced. It suggested further studies on Mass Transit (metro rail, subways) issues before planning and implementation, and STP (Strategic Transport Plan) is one of those studies (Ministry of Communications, 2004). The Dhaka Strategic Transport Plan (STP) formulated in 2005, which has been recently revised as Revised Strategic Transport Plan (RSTP 2016) proposed an urban transit network comprised of a three Bus Rapid Transport (BRT) lines system and three Mass Rapid Transport (MRT) lines. The vision for STP is to accommodate the transit needs of the Dhaka Metropolitan Area (DMA) while also helping to ease climate

change by reducing air pollution in the DMA through switching to a public transportation system. There are detail outlines of how these BRT and MRT lines would be implemented, but there is no mention of flyover construction (Dhaka Transport Co-ordination Board, 2007). Even though flyover is small scale infrastructure compared to BRT and MRT lines, but every aspect of infrastructure project needs to be mentioned in the plan to have an integrated development. The implementation of flyover projects which has no mention in the STP and its extensive network of roads-and-rail plan make everyone wonder why it was approved in the first place, mentioned by an interviewee. He said that,

“It looks like the approval and implementation of these controversial flyovers have been made on political grounds, not technical ones”.

Table 5.4: Concept 2 developed from 7 Indicators derived from Initial Coding

Indicators	Concept 2
1. Fault in Strategic Transport Plan	Weak Strategic Plan
2. Implementation doesn't match with project goal	
3. Project scope and goal changes over time	
4. Project plan doesn't comply with STP or Revised STP	
5. Weak Strategic Transport Plan	
6. No mention of Flyovers in STP	
7. Mention of overpass in STP, which was changed to Flyovers	

Source: Author, 2019

Furthermore, other interviewees mentioned that there are weaknesses in Strategic Transport Plan to present the detail study of MRT and BRT lines and failed to start its implementation before the flyover construction project. The implementation of the components of STP or RSTP does not reflect the intension to mitigate transport problems of the masses. It has ignored the needs of non-motorized travelers (e.g. rickshaws, vans, bikes etc.) and pedestrians. All the recent policies at all levels have focused on trying to lessen the travel

time for the motorized elite of the city by putting preference on the construction of numerous grade-separated flyovers, overpasses and interchanges. These rapid motorization and heavy infrastructural constructions promote private vehicles with the diminution of transportation equity in a city. Also, supply increases more demand, these flyovers and other infrastructure developments have encouraged more motorized vehicles in the city. This situation is causing a major concern from an environmental and equity perspective, which has been totally ignored in these transport plans (Alam, 2019).

Concept 3: Quick and Short-Term Solution

Dhaka is facing exponential traffic congestion from last decade, and government is trying anything to curb this problem. Flyover construction projects are seemed by the policy-makers as short-term, temporary and quick solution to these massive congestions in Dhaka.

International donor community and funding also play a significant role in setting and shaping this policy agenda for the policy makers to go for the quickest projects. They are dependent on these aids and to keep the continuous flow of these donor supports they need to allocate funds to whatever projects and then flyover projects come as handy. One of the country's leading development economists has noted that "the psychology of dependence on donors has become ingrained in the mind of military, political and bureaucratic decision-makers in Bangladesh" (Shakil et al., 2016). This incapacity to restore sovereignty of the policy making process of Bangladesh has intensified and eroded the nation's credibility and authority.

Although the dependence of aid has visibly declined in numeric terms during 1990s and onwards, the reliance on policy advice from donors still remains strong (Shakil et al., 2016). One of the renowned Transport Specialist in Dhaka said in the interview that,

“Our vision and policy decision should be focused on shared transportation system. We should be focusing on big transportation (e.g. bus, trains, metro etc.) and discourage small vehicles (e.g. private cars).”

Table 5.5: Concept 3 developed from 12 Indicators derived from Initial Coding

Indicators	Concepts 3
1. Incompetent policy makers	Quick and short-term solution
2. Overlooking the impact study of flyovers	
3. Quick solution to congestion	
4. No mention of Flyovers in STP	
5. Less funding required then MRT/BRT	
6. Tendency to choose immediate, cheaper solution	
7. Lack of knowledge on sustainable transport	
8. Disregard to sustainable, environment friendly solution	
9. Policy makers prioritized car-oriented infrastructure	
10. Policy favoring the affluent citizens, car owners	
11. Lack of sustainable vision among policy makers	
12. Disregard to expert advice	
13. Prolonged and complex feasibility and technical studies of long-term planning	
14. Complex dynamics of feasibility studies of long-term planning	

Source: Author, 2019

Dedicated public transport line instead of these giant flyovers will increase the overall speed of traffic movement in Dhaka. General public as well as government need to realize that

public transport is the one sustainable transport for a city like Dhaka, it is either BRT or MRT, he said. Flyovers already reduced the existing rights of way of the street, and public transport can't use flyovers, thus it eliminates a large portion of transport movement in street. Moreover, pillars of already built flyovers are constructed though underground, and they will create obstruction for the future MRT lines. So, flyovers not only reduced the rights of way on our pressurized traffic streets, it also destroyed the possibility of creating MRT/BRT on those area. Following image shows how this particular flyover in 'Jatrabari, Dhaka' has reduced the existing rights of way.



Figure 5.1: Existing rights of way reduction of “A H M Kamruzzaman Sarani” street by Mayor Mohammed Hanif Flyover

Source: (R. MD. Islam & Hoque, 2018)

During interview, a newspaper reporter said that government is recently thinking about long term and sustainable solution, but then again, the flyovers become “thorn” (i.e. obstacles) in those sustainable solutions. He also mentioned at the concluding part of the interview that,

“it is beyond our grasp that the concerned ministry and policy makers would prioritized car-oriented infrastructure over a mass transport facility for a developing country like us”.

The flyovers actually cut the route by half for the dedicated right of way of BRT, as flyover itself takes more than half of the rights of way of the street. Moreover, it will affect the travelers as they will have to get off where the BRT routes end and look for another mode of transport to get to their destination which really doesn't make any sense. The following Figure 5.2 shows the conflict points circled in black where flyovers impede the potential construction of BRT and MRT lines in Dhaka.

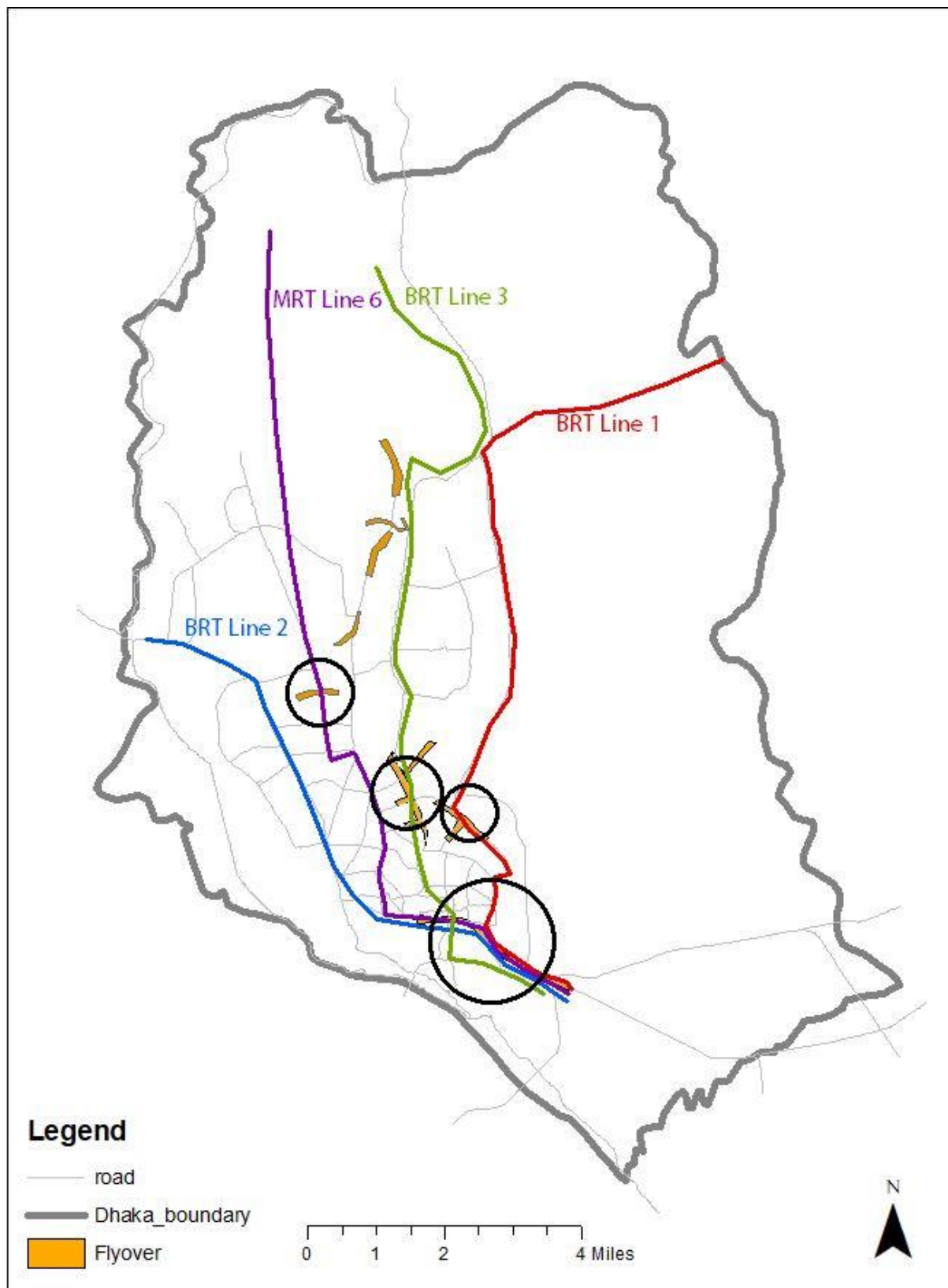


Figure 5.2: Conflict between flyovers, and BRT and MRT lines in Dhaka city

Source: Author, 2019

Concept 4: Weak Governance and Regulatory Framework

Table 5.6: Concept 4 developed from 9 Indicators derived from Initial Coding

Indicators	Concept 4
1. Lack of accountability	Weak Governance and Regulatory Framework
2. Contradiction between government and private agencies	
3. Lack of coordination among transport agencies	
4. Loose organizational framework	
5. No coordination among agencies	
6. Opposition between cabinet and transport agencies	
7. Ineffective administration	
8. Ineffective institutional framework	
9. Poor planning activity	

Source: Author, 2019

The five pillars of public governance (administrative, political, economic, regulatory, and legislative) have posed formidable obstacles to establish and reform key institutions, refine processes and strategies of management and guide the country toward a more efficient system (Alam & Teicher, 2012). It has been mentioned in ‘Bangladesh Transport Policy Note’ that implementation of the transport sector policy has been hampered by the weak institutional framework governing the sector. It is difficult to achieve a balanced and coordinated transport system in Bangladesh because the government does not have a system for coordinating development plans and budgets in a fragmented organizational framework, while three ministers and several agencies are responsible for transport sector policy and development (BD-Transport-Policy Note, 2009).

Interviewee stated that, one issue which is very critical in this country is that the agencies lack co-ordination among each other. According to Dhaka Transportation Coordination Authority (DTCA) act, DTCA is supposed to do all the decision making work and responsible to coordinate other transport agencies and projects. Unfortunately, many projects are being passed without consulting DTCA and they are sometimes obliged to approve them as the direct command comes from the Cabinet. He as well as the Deputy Secretary of DTCA mentioned that Cabinet is the main decision-maker, although primary approver and consultant is DTCA, according to the act. Cabinet approved some flyover projects without proper consent from DTCA, only to support their political and financial agenda. According to the report of Transparency International, the selection of road works, politicians and local elites steer state-funded projects to unproductive investments to gain political constituents (*BD-Transport-Policy Note*, 2009). It is very unfortunate to say that 40% of the project money goes directly to the pockets of the politicians. Upper-class landowners influence the routing of road, leading to repeated changes in road alignments and increase in the cost of construction consequently resulting poor construction material, less labor than required and construction delay, eventually increasing project cost than anticipated at the end. Corruption during procurement and supervision of civil works is believed to contribute to the poor quality of infrastructure. An urban planner during interview revealed that the organization of the agencies are not proper, for instance, RAJUK (Capital Development Authority) or LGED (Local Government Engineering Department) were agencies responsible for the implementation of Hanif and Malibagh-Mouchak flyover projects respectively, whereas they aren't supposed to be in authority of infrastructure projects of this scale in Dhaka. When the reason was asked in the interviews, the participants said these organizations had financiers (World Bank, Japan International Corporation Agency) ready with them as liaison for these projects, and Cabinet gave approval to their proposal to get the continuous flow of funds. In

the local newspaper Dhaka Tribune, experts shared their concern that many of the flyovers are constructed without consulting the Revised Strategic Transport Plan (RSTP) prepared by the Dhaka Transport Coordination Authority (DTCA). Consequently, authority responsible for these flyovers have no accountability and this is creating negative impact on public movement. Also, experts said that responsible authority does not adhere to monitor the implications of these flyovers, if they have met the objectives of the plan or not (Mamun, 2017). Besides, after implementation of MRT and BRT projects in Dhaka, these flyovers would be of no use and the enormous money invested on these infrastructure projects would be wasted. Dhaka is too small a city to accommodate flyovers, BRT and metro rails altogether; and in some cases, the routes of metro rails and flyovers collide. Also, some experts said during interview that Dhaka is not yet ready for metro rail, proper management and technical skills are further required to administer, manage and control this complex facility in Dhaka. Tusher in his research article said that the reason for the inefficiency of the flyovers in Dhaka is institutional corruption and the other is implementation inefficiency (Tusher, 2016). Above all he stated that, the flyovers in Dhaka cannot handle traffic management during peak hours, they are only temporary unsustainable solutions.

Concept 5: Limited Budget and Technology

Budget limitation is one of the main reasons for taking flyover projects by government. STP proposed three MRT lines and three BRT lines, but lack of funding delayed its implementation. The fund for flyover construction is lower than constructing MRT or BRT line, covering huge portion of the city.

Table 5.7: Concept 5 developed from 7 Indicators derived from Initial Coding

Indicators	Concept 5
1. Flyovers required less funding than MRT/BRT	Limited Budget and Technology
2. Inadequate funding for long-term solution	
3. Limited budget	
4. Land unavailability	
5. Lack of modern technology for large infrastructure	
6. Limited knowledge on large infrastructure management	
7. Poor forecasting	

Source: Author, 2019

Due to lack of modern technology, sustainable long-term solution couldn't be achieved, instead flyovers are constructed as a "quick and easy solution to deal with the traffic gridlocks", according to an interviewee. In Revised Strategic Transport Planning (RSTP), many long-term sustainable projects are proposed like BRT and MRT which are large in scale, needed extensive study and revision as well. Transport consultant in the interview said, the technology required to construct and manage metro rail in Dhaka was not available, thus government needed to do something to immediately ease the congestion. Hence, flyover projects came in handy in terms of construction duration, feasibility study, financial aspect and available of technology. Siemiatycki in his research on large infrastructure project claimed, one of the main reasons of failure in large infrastructure projects has been claimed as incomplete and inadequate technical and financial studies prior to project approval (Siemiatycki, 2015); which is also evident in the setting of flyover construction in Dhaka.

Concept 6: Show-Casing Development of Government

Table 5.8: Concept 6 developed from 7 Indicators derived from Initial Coding

Indicators	Concept 6
1. Decisions made on political basis	Showcasing development of Government
2. Quick and easy solution to display government work	
3. Priority given from Cabinet	
4. Loose organizational framework	
5. Government accept cheaper and immediate development projects	
6. Showcasing government development	
7. Gain more political support and popularity	

Source: Author, 2019

The ruling parties in Bangladesh have almost always tried to establish “hegemonic” control over the use of public resources to strengthen their political interests. And they do it under the umbrella of public interest. Public policy making in Bangladesh is thus characterized as the “outcome of incentives” created by aiding politics as opposed to the obligation for the government to play an effective development role (Shakil et al., 2016). According to an interviewee, Government of Bangladesh might have got interested in building flyovers to project its big development in front of public as flyover is wrongly perceived as a symbol of progress and development. This might be the case for many countries all over the world, as Short and Kopp pointed out an important issue regarding the role of government in large transport infrastructure- where in many times the role of government as a protector of public interest has become secondary to its role as promoter of projects (Short & Kopp, 2005). Government of Bangladesh in its five years of ruling time wants to promote the projects, which are quick and presentable development to the eyes of public. Hence, flyover projects are used a “trophy” by the ruling government. According to an interviewee,

“flyovers may ease congestion for some time, but eventually these big infrastructures will turn into a burden for a city like Dhaka. We know that flyovers can’t be the solution to these gridlocks, but authorities aren’t paying any attention to it. Also, these big infrastructures reduce the scope for metro rail and dedicated bus lane, which could be the actual sustainable solution for Dhaka”

The Government’s legislation in Bangladesh lacks its effectiveness to act against corruption due to its weak law and order. Some bureaucracy takes the form of demonstrative part of the political showmanship. It has never been easy for the political government in Bangladesh to implement its policy, goals and manifesto because the democracy under any political party in Bangladesh is not impartial, natural and professional. Government of Bangladesh is seen to behave more with its political philosophy, and especially by the entire political party in power as if they are government themselves (Hossain, 2017).

Bent Flyvbjerg, the leading expert on mega project management proactively argued that the real reason for the failure of infrastructure projects can be categorized into two groups- ‘fools’ and ‘liars’. He portrayed the truth in a bold manner in his article that fools are the reckless optimists who see the future with rose-tinted glasses but ignore facts and uncertainty. Liars deliberately mislead the public for personal gain, fiscal or political, by projecting overly positive prospects of an investment just to promote and implement the project (Flyvbjerg, 2007a). Flyvbjerg et al, in their study of large infrastructures reconfirmed a general fact that there is rarely a simple truth about mega projects, ‘what is presented as reality by one set of experts is, in many cases a social construct that can be deconstructed or reconstructed by other experts’ (Flyvbjerg et al., 2003).

Substantive Theory

Theoretical coding is identifying final set of categories from the concepts emerged and finding relationships among them. Categories are inductively built up from facts, data and focused coding, and grouping them into greater abstraction; which eventually lead to the substantive theory of this research. The six concepts in focused coding represent the reasons why government is choosing flyover construction projects, and theoretical coding helps merge all the concepts together to form abstract categories indicating the root reason of this issue. The categories that evolved inductively from the concepts are- Political Decision Making and Weak Institutional Framework.

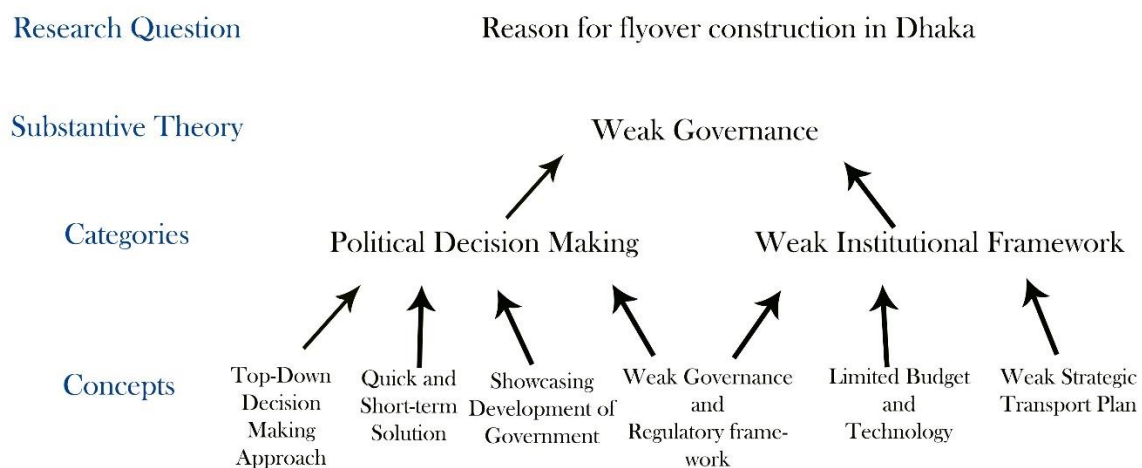


Figure 5.3: Theoretical coding stage: Developing categories or substantive theory inductively from the concepts developed in focused coding stage

Source: Author, 2019

Political decision-making of government of Bangladesh is one of the root reasons for the flyover construction dilemmas in Dhaka. From data collection and content analysis, it is observed that the decision-making of infrastructure projects is based on political grounds. Transport agencies are not independent, and mostly rely on Cabinet decisions. Cabinet prioritizes on their popularity and reputation of so called eye-catching “development” among the public, not on long-term sustainable solution for the city.

Flyovers in Dhaka failed to curb the congestion long ago, but its implementation is continued because of the weak administration and poor planning. Weak governance of Bangladesh can solely be held responsible for these haphazard and ad-hoc flyover projects in Dhaka. Good governance can be defined mainly based on accountability in the public sector and the institutional capacity of the executive branch of the state (Stoker, 1998). The accountability is nearly absent in public sector due to the politicization of bureaucracy and powerful political party. “Public outreach” and “public input” are two words that are almost foreign in the public sector of Bangladesh, even though constitutional name of Bangladesh is “People’s republic of Bangladesh”. These situations automatically result in weak institutional capacity of the sector. Administrative framework is loose and inefficient, and they stick to flyover projects due to lack of budget and technology for MRT and BRT. Policy makers’ quick and cheap solution to congestion resulted traffic chaos in the city for long term. Moreover, BRT (dedicated bus lane) is not actually fiscally unattainable; lack of vision and motivation among the policy makers are the factual reason behind it. All these inefficiencies and unfortunate practices lead up to the main reason behind the problem, which is the loose governance in the areas of planning and political practice of Bangladesh. Brinkerhoff and Goldsmith defined good governance as the process through which state officials as well as individuals interact to express their interests, exercise their rights and obligations, work out their differences and co-operate to produce public goods (Brinkerhoff & Goldsmith, 2005). In the scenario of Dhaka, lack of communication and co-ordination among transport agencies and experts led to weak governance which in turn led to these unplanned flyover projects.

Chapter 6 - Recommendation and Conclusion

Recommendation

The reason for the construction of this short-term political solution to Dhaka's traffic and its failure have urged to do further research and advocacy on sustainable solutions. The thesis tried to propose some recommendations in response to the substantive theory derived in the analysis.

Strengthening Governance: According to Bangladesh Transport Policy Note, the governance of Bangladesh could be strengthened if the parliament of Bangladesh allowed public to have more voice by passing a “freedom of information act” granting public access to different aspects of financial and project management by government, such as allocation of state budgets and awards of contract for public works and supply. Transport policy and planning framework lacks transparent integration to prioritize investments, which confines the ability to properly allocate resources among competing sub-sectors (*BD-Transport-Policy Note*, 2009). For example, USA has “Freedom of Information Act” effective since 1967, which is a federal law regarding freedom of information that provides any person the right to request access to federal agency records or information. In India, the “Right to Information Act” passed in 2005, has had a big impact in giving civil servants a strong incentive to be more transparent and accountable in their management of public affairs (Act (FOIA), n.d.; “Right to Information,” n.d.). Local participation and public outreach need to be emphasized in the transport sector of Bangladesh.

Organized Transport Sector: In this research, top-down decision-making system and distorted institutional framework were found to be the major reasons for the unplanned infrastructure development in Dhaka. Organization and management of the transport sector

needs to be strengthened and clear commitment from the highest levels of government is required to crack-down on corruption. Public interest needs to be the highest priority, rather than any particular political interests. Show-casing political development can bring good if it is harmonized with public interest. Politicians and policy makers need to realize long term sustainable development can bring more fame and popularity to their work, than those short-term quick solutions.

Enhance Internal Funding: A 2009 UN report states that long term policies and measures are needed for Bangladesh to diversify exports, enhance internal resource mobilization and to build domestic financial sectors and productive capacities. Internal resource and financial independence might help policy makers focus on long-term planning and sustainable solutions (Shakil et al., 2016).

Proper Coordination among Agencies: The data analysis revealed that lack of coordination among agencies resulted in the despair condition of Dhaka's transport system. Proper coordination and communication should be in place between all the planning agencies and infrastructure development authorities of Dhaka. These include Dhaka City Corporation (North and South), Local Government Engineering Department, RAJUK (Capital Development Authority) and Roads and Highway Department. Dhaka Transport Coordination Authority (DTCA) need to be more active in its role to coordinate the efforts of all these organizations, should work with more planning and efficiency to resolve conflict of interests between them.

Emphasis on Public-Private Partnership: It has been found in the study that there is a lack of proper partnership among public and private sectors in the transport scenario of Bangladesh. A conducive environment needs to be created for the implementation of all the

PPP projects. All kinds of bureaucratic mindset that exists in the administrative framework of the government need to be peeled off when it comes to PPP projects. No agreement should be altered or removed without discussing with the private investors, as it happened many times in flyover projects, resulting incompetency and unexpected implications of the projects. The government also needs to be prompt in delivering its commitments, such as land acquisition and utility shifting because delays in project completion will set back overall progress. A robust regulatory framework needs to be established for the successful realization of the PPP projects (*BD-Transport-Policy Note*, 2009).

Looking at demand-side of the problem: Government of Bangladesh is building flyovers and expressways, but they also need to pay attention on the surrounding impacts created by these infrastructures. For instance, how these infrastructures are impacting the surrounding land price, house rent, social structure, gentrification and security of neighborhoods. A detailed study of political-economic effect of these flyover projects need to be done. Dhaka city is overburdened with population because of the excessive rural to urban migration. Lack of educational institutes, employment, natural disasters and rural poverty drive people to migrate to Dhaka. Decentralization of developments and policies would be a long-term solution for Dhaka, as well as for Bangladesh to control this disorderly and excessive migration, and consequently will ease the congestion of Dhaka. In short-term, radical measures need to be taken to control the ownership and use of cars and land. Stringent control of land uses needs to be taken to avoid high dense developments in already populated neighborhoods, or in a narrow alleyway. Finally, a permanent and sustainable solution for the traffic havoc of this city would be- bus sector reform. All the bus organizations and owners need to be combined under one authority. The streets of Dhaka are occupied by buses from

hundreds of companies, competing and overtaking each other, impeding the natural flow of the traffic. Many accidents have occurred due to this situation.

MRT and BRT as long-term solution: Rail based mass transit system offers the greatest capacity to carry out large number of people (up to 40,000 per hour per direction in peak hours). This MRT will physical occupy six lanes of corridor underground with operational capacity of twenty-five lane, without taking any extra surface ground at-grade, simultaneously carrying a large number of passengers of Dhaka. Responsible authorities need to figure out the locations where flyovers and overpasses are blocking the future MRT routes proposed in RSTP and coming up with a coalition to dismantle them might be a better solution in the long run. MRT can serve as the central backbone of the city's public transport network, but it is unlikely to serve the entire city if there are interruptions due to the position of flyovers or overpasses in its routes. Although, the construction and management require high cost and modern technology, it will also incur a high continuing cost to operate. On the other hand, Bus Rapid Transits (BRT) are considered to be affordable, comfortable and environment-friendly traffic solutions that can supplement MRTs by facilitating urban commuters to travel safely and swiftly within the city. It was first developed in Brazil and has been adopted successfully in Bogota (Columbia), Mexico City and Toronto (Canada). China has also implemented the first BRT routes in Beijing and is developing them in other cities. They are designed to occupy two central lanes- 6.5 meters wide and cordoned-off of existing roads and intended for dedicated, disciplined and reliable bus service. BRTs can prove to be efficient and productive to alleviate traffic congestion within the city. The infrastructure can cost one-half that of the MRT option because it is standard road technology and greater use of streets can be made at grade. However, the importance of proper coordination between

different stakeholder agencies are always necessary in the context of the city and cannot be overemphasized.

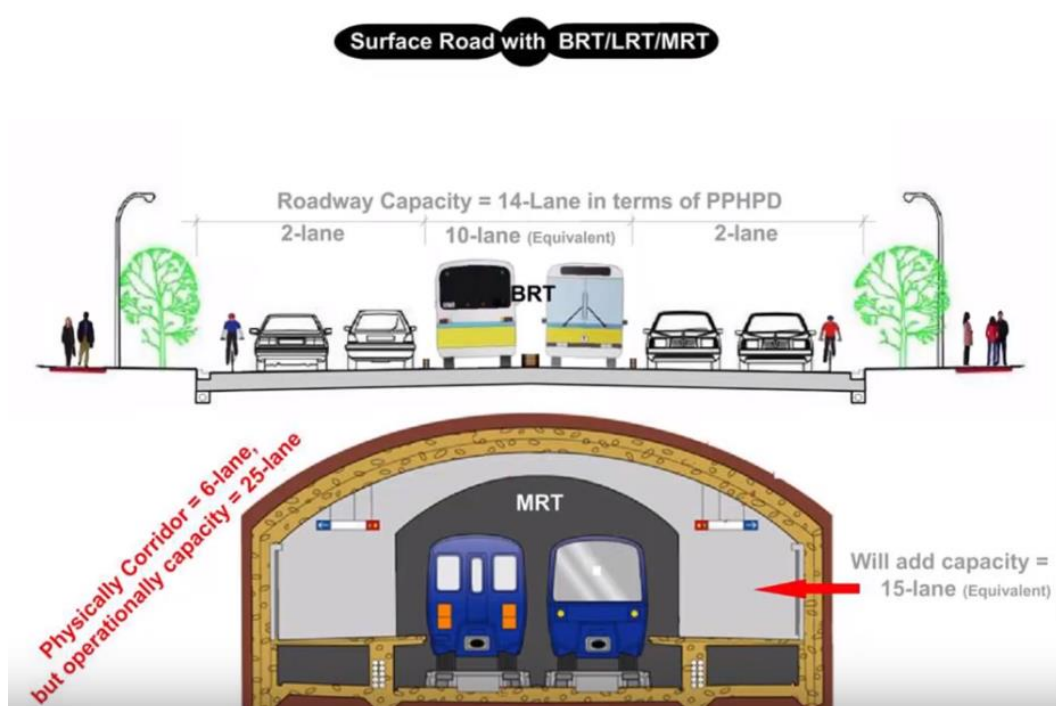


Figure 6.1: BRT at-grade and MRT underground infrastructures for long-term sustainable solution for Dhaka

Source: (TEDx Talks & Hoque, 2017)

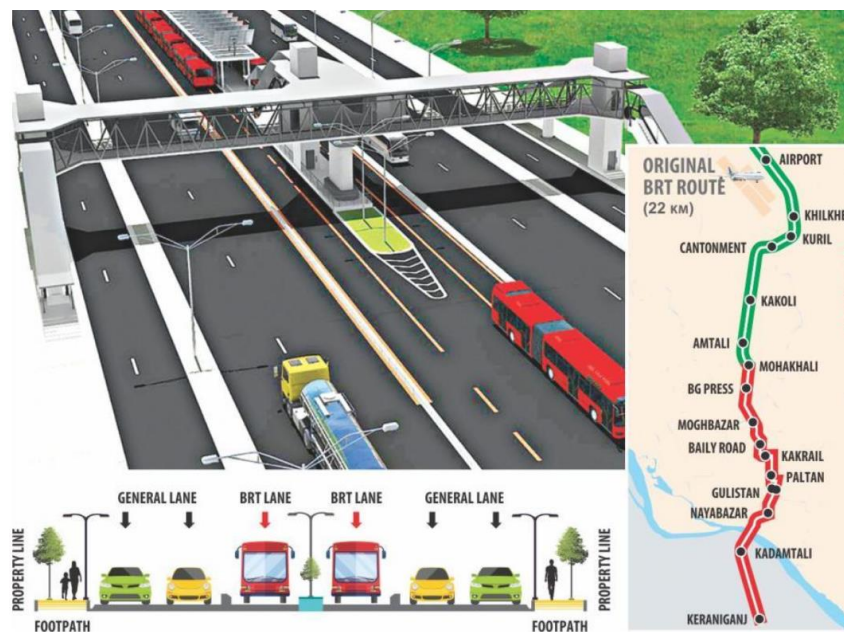


Figure 6.2: Dedicated bus lane for bus rapid transit routes (BRT) plan for Dhaka in RSTP

Source: ("A flyover becomes a thorn for BRT," 2018)

Conclusion

This research tried to dig into one of the most controversial topics in Dhaka- bypassing good transportation planning. The findings revealed how weak government can undermine sustainable planning and short-term political decision impedes long-term development of a city. The concepts and theory derived in the findings of the research not only indicate the reason of flyover construction in Dhaka, but also the reason for the flyover failures. And it can be applicable to any infrastructure decision-making, not only flyover; it can be applicable to any developing country, not only Bangladesh and even in developed countries. Improved planning process, transparency and accountability in the transport sector at all level of government involvement are key to better governance and increased efficiency in the use of limited resources. Moreover, these can be done by supporting demand-side accountability through increased engagement with civil society, local beneficiaries and other interested parties. More investigation of these infrastructure planning and decisions with respect to socio-economic implications will help in developing an improved framework for policy makers. With all these flyovers and overpasses being implemented and more in the pipeline, Dhaka city needs to find an optimum balance between what to prioritize to build and what not. And if we can fix Dhaka, we can fix Bangladesh. There have been many planning and investments made, but the people of Dhaka have seen nothing yet.

It has been obvious that if we expand roads, the congestion also expands. But the policy makers of Dhaka need to focus on demand side, not the supply side for sustainable solution. These policy decisions should incorporate shared transportation system at first, to accommodate enormously expanding population. Priority should be given on big transportation and small transportation should be discouraged. It is also anticipated that this study will educate city authorities, transportation planners and transport agencies as it

addressed political and social issues in future planning decisions. It will allow them to take appropriate steps to overcome planning and administrative challenges that afflicted the entire infrastructure system by implementing flyover or overpasses. If everything as recommended could be carried out ideally, it would not be over-optimistic to say that we can get the lost city, Dhaka back to its harmonious stage in next two decades, radiating in the tide of development.

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Appendix A - Figures

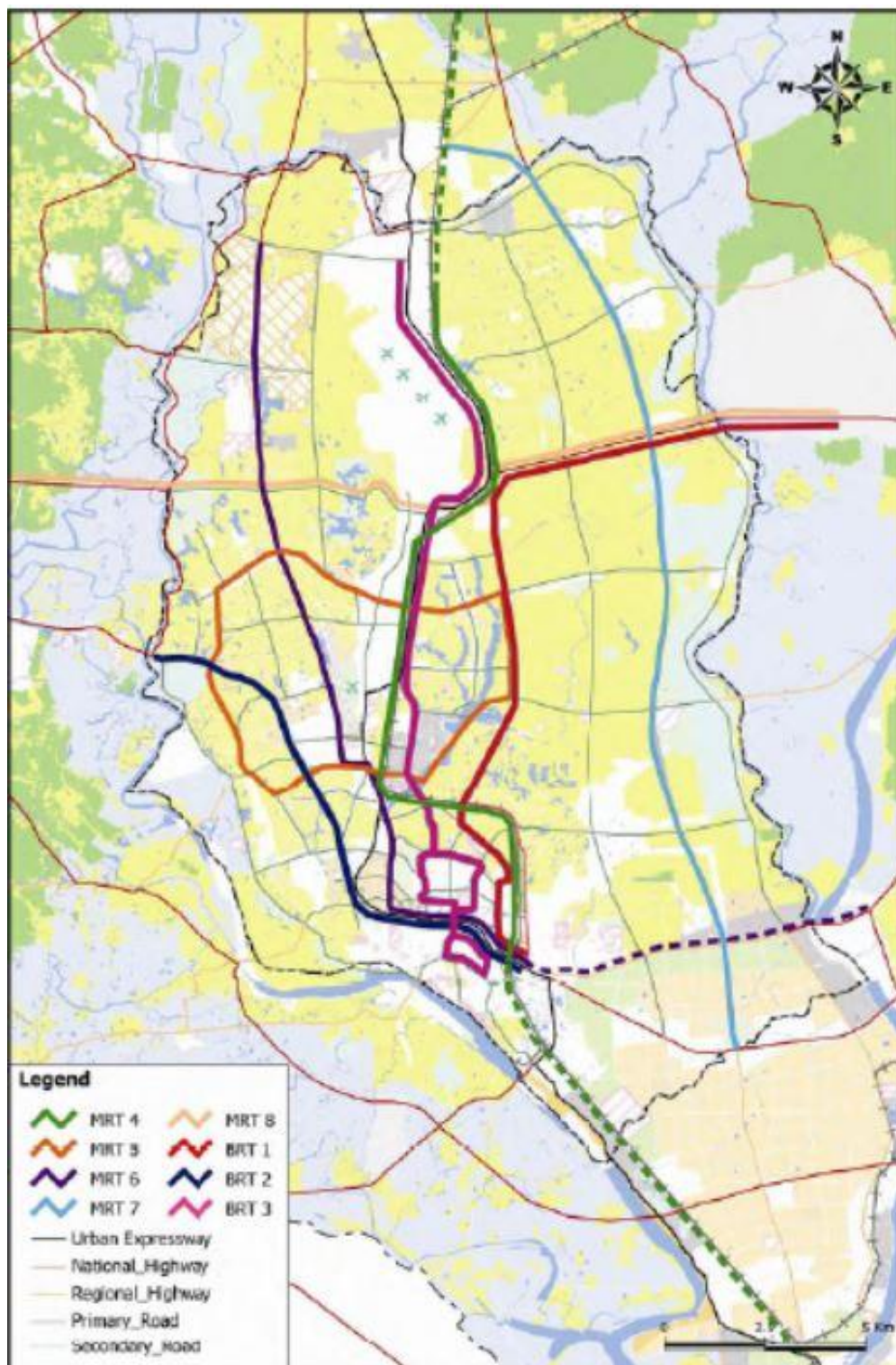


Figure: Urban Transport Network Development Plan in Dhaka Metropolitan Area (DMA)

Source: JICA, 2010

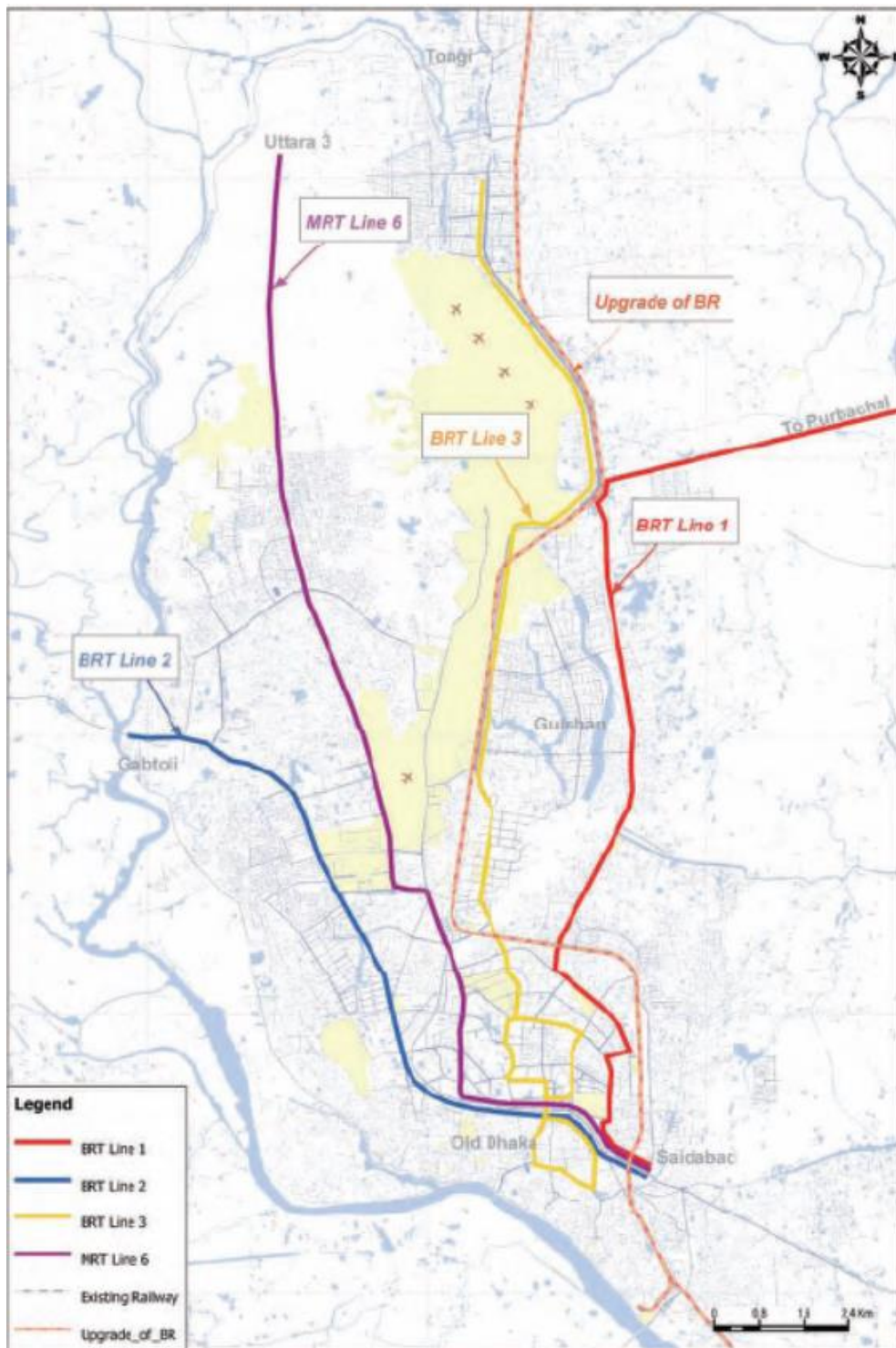


Figure: Proposed Mass Transit Network in 2025
Source: JICA, 2010



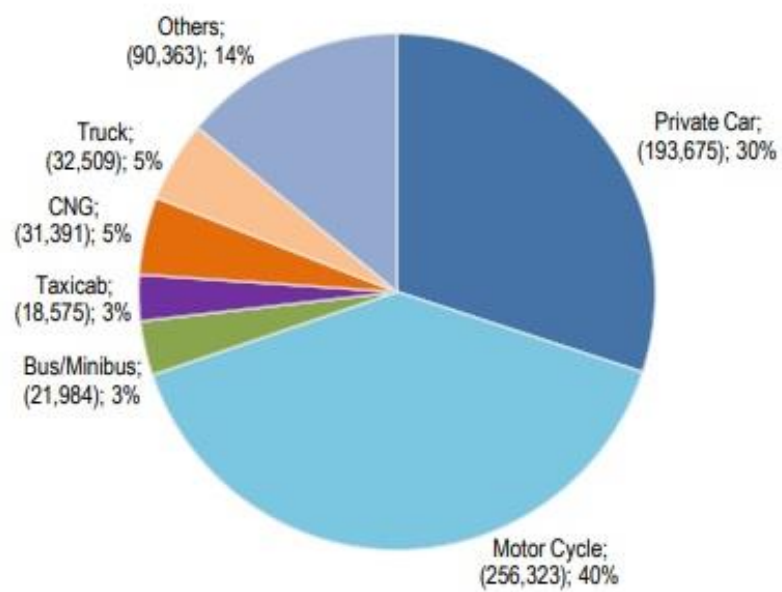
Figure: Limited users of Flyovers, most vehicles are still observed underneath flyovers



Figure: Negligence in following safety rule in construction work resulted death to a passerby and two employees last year.



Figure: More roads demands more vehicles, causing more congestion



Source: BRTA

Figure: Dhaka Transport ridership
Source: BRTA, 2018

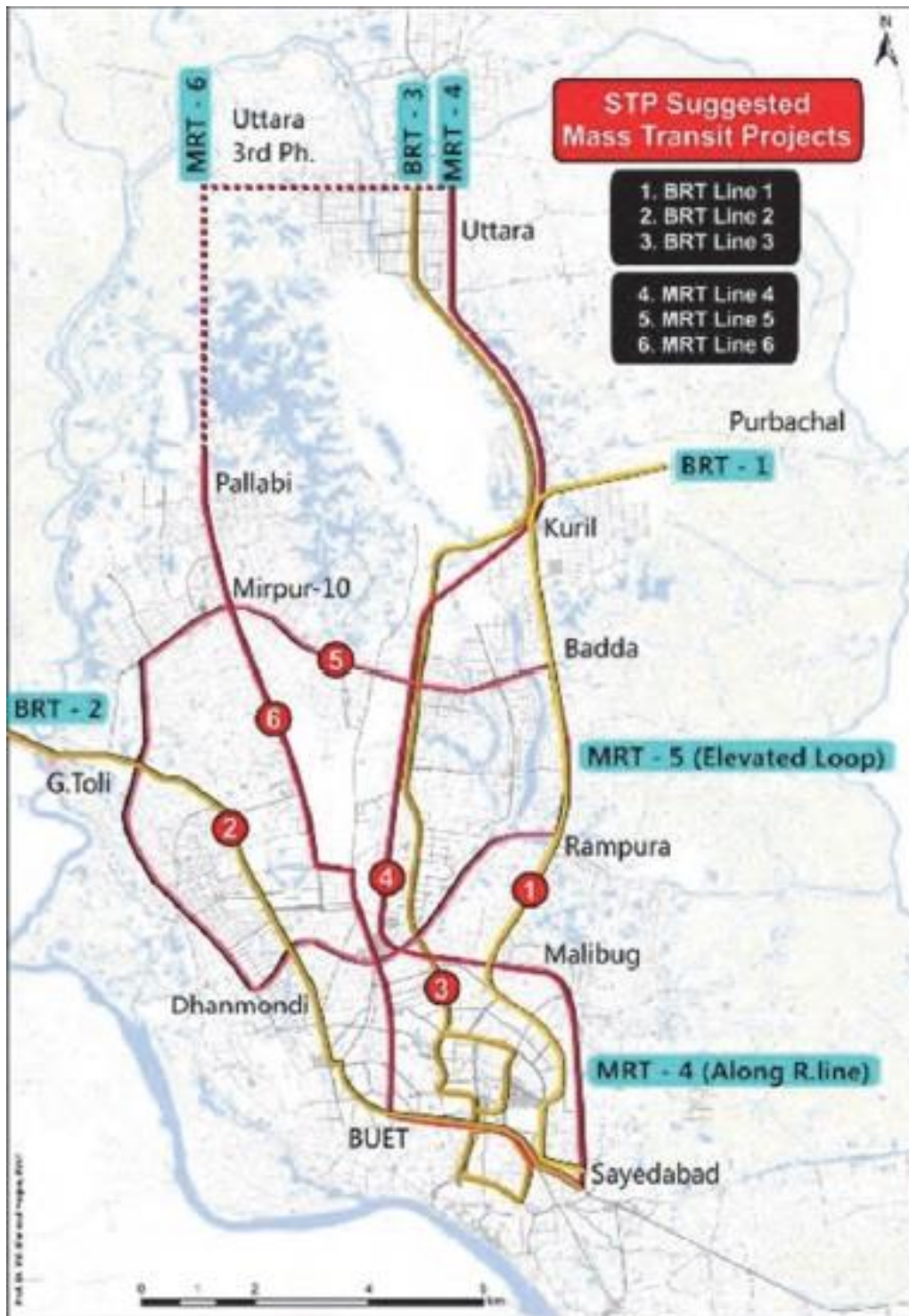


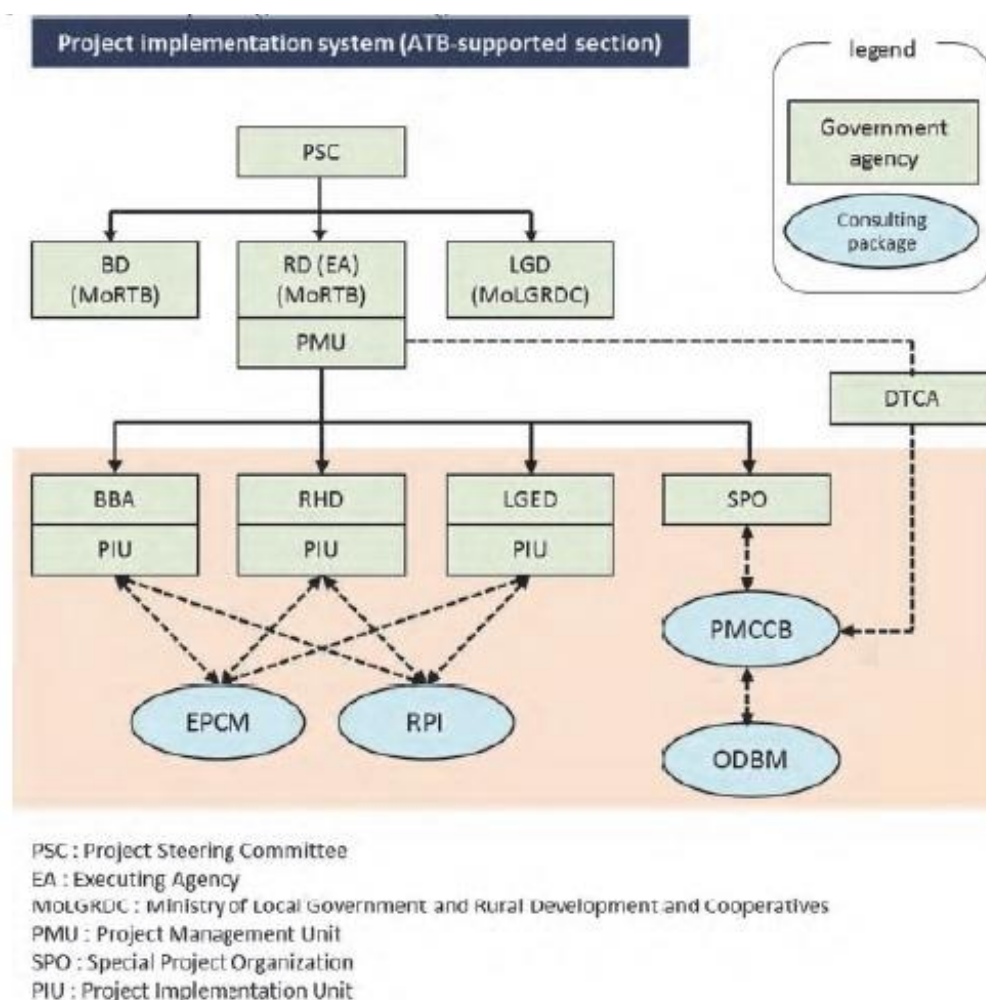
Figure: Dhaka Metropolitan Area map of MRT and BRT alignment

Source: RSTP, 2016

	Statutory Power	Issuing Body	Consultation	Remarks
Act	Power of the Government, rights and duties of the citizens	Parliament		
Rule	Discretionary power of the Government delegated by Act	Government	Ministry of Law	
Regulation	Discretionary power of the Authority delegated by Act	Authority	Respective Ministry and Ministry of Law	
Directive	No legally binding power	Government or Authority	Board of Authority	Specific Directive may become legally binding if delegation of power is stated in the Act

Figure: Legal framework and power of Bangladesh

Source: (Ministry of Communications, 2004)



Source: Ministry of Road Transport and Bridges

Source: (Ministry of Communications, 2004)

Appendix B - Interview Questions and Memo

Interview Protocol

E-mail recruitment script

Hello,

I am Fabiha Atique Mubassirah. I am a graduate student in Kansas State University in United States, studying Regional and Community Planning. I am doing my master's thesis project on flyover construction projects in Dhaka. My research focuses on current flyover construction projects in Dhaka, and research purpose is to identify underlying reasons for its implementations. As a part of my research which is the most vital, I am interviewing a wide range of people involved with transport infrastructure specially flyover construction projects in Dhaka, Bangladesh. This study has identified you as a knowledgeable participant in transport infrastructure decision making process and its implementation in Dhaka.

I am e-mailing to ask your willingness if you would let me interview you. Our conversation should take about thirty to forty minutes, not more than that. If you would be interested in participating in this interview, please let me know when a favorable time to schedule. If you have any question, please feel free to contact me at fabiha@ksu.edu and phone number – 01749661892.

Looking forward to hearing from you and thank you for your time.

Best regards,

Fabiha Atique Mubassirah

Graduate Student

Masters in Regional and Community Planning

Kansas State University

Interview script

1. Name and Profession (will keep it anonymous).
2. Length of employment in current workplace.
3. Transport projects and research involved- government and private.
4. How many years have you been involved in transport related projects/research?
5. How is your and your company's relation with the Government and Cabinet?
6. Are flyover construction projects in Dhaka good solution to the massive traffic congestion?
7. Can you please briefly describe your experience with flyover projects in Dhaka?
8. There have been many criticisms and controversies regarding the impact of flyover projects recently. What is your opinion regarding the matter?
9. How do you think it solving the traffic congestion problem?
10. If not, what other solutions could be implemented to curb the congestion?
11. Do you want to propose an alternative solution for this traffic congestion?
12. If so, what impediments/obstacles you think you will face for the acceptance or implementation from the government?
13. If you think Flyover is not a good idea, why did you propose it?
14. Why did government select the flyover construction projects after knowing its least feasibility and sustainability?
15. After observing the effects of flyover construction in Dhaka, do you want to design/propose/support flyovers in future as well?

IRB Approval



University Research Compliance Office

TO: Dr. Gregory Newmark
Landscape Architecture/Regional and Community Planning
1093 Seaton Hall

Proposal Number: 9590

FROM: Rick Scheidt, Chair 
Committee on Research Involving Human Subjects

DATE: 01/05/2019

RE: Proposal Entitled, "Flyover Construction Projects in Dhaka: A Grounded Theory Approach to Identify the Root Cause for its Implementation"

The Committee on Research Involving Human Subjects / Institutional Review Board (IRB) for Kansas State University has reviewed the proposal identified above and has determined that it is EXEMPT from further IRB review. This exemption applies only to the proposal - as written - and currently on file with the IRB. Any change potentially affecting human subjects must be approved by the IRB prior to implementation and may disqualify the proposal from exemption.

Based upon information provided to the IRB, this activity is exempt under the criteria set forth in the Federal Policy for the Protection of Human Subjects, **45 CFR §46.101, paragraph b, category: 2, subsection: ii.**

Certain research is exempt from the requirements of HHS/OHRP regulations. A determination that research is exempt does not imply that investigators have no ethical responsibilities to subjects in such research; it means only that the regulatory requirements related to IRB review, informed consent, and assurance of compliance do not apply to the research.

Any unanticipated problems involving risk to subjects or to others must be reported immediately to the Chair of the Committee on Research Involving Human Subjects, the University Research Compliance Office, and if the subjects are KSU students, to the Director of the Student Health Center.

Memo Writing

Memo 1

Interviewee 1

07/11/2018

The interview was very short, but the conversation was resourceful and informative. The Interviewee was Deputy Secretary of DTCA. He started with the brief description of the role of DTCA in the transport sector of Bangladesh. In his words- “DTCA mainly coordinates all the transportation decision making work. We prepare strategic transport Plan and provide regular supervision for all possible transportation infrastructure planning and development works. We work within Dhaka and adjacent districts.” From this interview, I got clue of my first concept of the reasons of flyover construction in Dhaka. He stated that- “The decision making in transportation sector of Bangladesh is more ‘Top-down approach’, Flyover is NOT a solution, It’s more a transfer of congestion from one place to another.”

He answered all the questions smoothly, like the answers were already prepared in his mind. That means he deals with these questions and issues very often. Moreover, he said that, there were weaknesses in Strategic Transport Plan (STP- long range transportation plan for Dhaka Metropolitan Area), to present the detail study of Mass Rapid Transit (metro rail) and Bus Rapid Transit (BRT) and failed to start its implementation before flyover construction project. Flyover construction project was selected by government as it was considered as “short term and quick solution” with less funding required than MRT. Also, “cabinet decision making” was one of the reasons. Despite being against of the flyover construction projects, DTCA had to select these for the direct command from the top. DTCA had the most opposition and conflict regarding the latest flyover construction from Shantinagar to “Jhilmil project” with what they have in Revised Strategic Transport Plan.

Initial Coding

- top down approach decision making
- Flyover is not a solution, rather a transfer of congestion from one place to other
- Weakness in STP
- Flyover – short term and quick solution
- Less funding than MRT/BRT
- Cabinet decision making
- Contradiction in different agencies

Memo 02

Interviewee 2 and 3

07/13/2018

How this alternative solution as flyover construction has been chosen? What were the key criteria for choosing this alternative?

What were the goals to accomplish by implementing the flyover projects?

The National Land Transport Policy was adopted in 2004 does not support flyover and subway. In section nine (Policies for Dhaka) of the policy it was stated that bus service and pedestrian would be prioritized and commuter rail would be introduced. On the issue of Mass Transit (subway, elevated expressways), it suggested for studies before planning and implementation. STP is one of those studies.

Would you say the overall flyover projects in Dhaka are a success? Why and why not?

All over the world are now against flyovers, almost. Flyovers are not only eye sore but also failed to curb traffic congestion. In Seoul and Tokyo flyovers have been dismantled or in the process of dismantling. Flyover does not decrease congestion but increase congestion. They are bad for business, decrease real estate value in the locality. There is growing consensus among transport planners that demand management is better solution than increased supply. Building flyover is supply solution and it would create its own demand. Contractors, engineer and bureaucrats are the main beneficiaries of the mega projects of flyovers, not the common people.

Now let's talk about some hard truth on metro.

“It has been already proven by STP consultants that subway is not an option for us. All over the world metro has been proven a white elephant costing a lot to central and local government just to make it financially buoyant.”

He mentioned that, In Bangkok, Thai government has to buy out private entrepreneurs to save it from bankruptcy; in Kualalampur, it has been placed under ministry of finance because continuous subsidy was making its parent company Malaysian Railway bankrupt. Sydney reintroduced tram instead of expanding subway. Even in Kolkata it is operating much below its design capacity to keep the loss at manageable level.

“But even after this if policy makers want to have flyovers and subway then as a concerned citizen tax payer I have every right to ask and of government's motive.”

So is there any way we could get out of this unbearable congestion?

He said, “Of course, there is. But for this government need to take some drastic actions. Also, there is not enough data on infrastructure in Bangladesh, feasibility study takes time. And research on this issue is very poor and discouraged.”

Government need to think about the surrounding impacts created by flyovers, for example- “land price increase/decrease, social structure, gentrification, security, crime rate, waste generation, house rent in surrounding neighborhoods.”

A thorough research on this was mandatory, which government almost overlooked, according to him. A study of political-economic effect of infrastructure projects need to be done.

If you were to choose again from the alternative options mentioned in STP (Strategic Transport Plan), would you choose another option? Why and why not?

The long-term solution is to decentralize so that people do not need to come to Dhaka. In short term we must take radical measures to control use of cars and land in Dhaka and we have to introduce Bus Rapid Transit and promote non-motorized transport.

Delhi, which is one of the last cities to introduce metro, is now aggressively expanding her BRT. One of the arguments put against BRT is that it is not suitable for mass transit as it has capacity constraint. But experience of Bogotá and Curitiba shows that BRT can compete with metro in terms of capacity. Bogotá's famous BRT (TransMilenio) can carry 35000 riders per hour per direction which is comparable with any medium size metro. The other advantages of BRT is its cheap fare and relative short time of construction.

It took Kolkata around 25 years to build its metro; though that is an extreme one, even the quickest (for example, Delhi) it took around eight years. On the other hand, examples in Curitiba, Bogotá, Quito, Djakarta showed that it is possible to provide a BRT service in three years' time.

“Our study shows that in Dhaka it is possible to introduce BRT in less than three years and run the service profitably by paying a fare less than two and half a taka per km. Construction of flyover and metro means complete or near complete close down of existing road sections while for BRT it is only the space for BRT.”

He added, and which was very important part of the interview, “Now just imagine most of the Dhaka closes for eight to ten years for introducing metro, and could Dhaka survive for that period? In Delhi and Kolkata that was different as there are enough alternatives in those cities.”

Is there anything you would have done differently (may be not mentioned in the STP) to improve the current traffic congestion in Dhaka?'

As population in Dhaka is increasing exponentially, do you think the city needs more flyover projects to tackle the growing traffic congestion?

There is no scope for subway or flyover in Dhaka from social, financial and economic point of view. But even after this, if government persists with subway and flyover then we must question policy makers' real intention. It should be noted here that most of construction related recommendations of DITS and DUTP are implemented while very few (if any) non-construction related recommendations of DITS and DUTP are implemented.

On the other hand, it is possible to make Dhaka congestion free within three years (that means under this government) by making simple steps of “increased control on cars, taking stringent measures before giving permission for high-rise building and introducing bus rapid transit.”

Initial Coding from the memo:

- Weakness in STP
- Incompetent policy makers
- Overlooking the impact study of infrastructure on surrounding neighborhood

Solution

- BRT (Bus rapid transit) and non-motorized transport
- Stringent land use control
- Increased control on cars
- Decentralization

Memo 3

Interviewee 3 and 4

07/13/2018

The interviewee has been known for being vocal and to be the first person to speak against the flyover havoc of Dhaka. His writing and interviews are regularly been observed in daily newspapers and media of Bangladesh. During interview, his strong opposition and frustration regarding the flyover failure and government mis-management was clear.

How this alternative solution as flyover construction has been chosen? What were the key criteria for choosing this alternative?

What were the goals to accomplish by implementing the flyover projects?

“There is lack of accountability in the system, specially people who make them. And this is affecting public movement. Every infrastructure project has certain objectives, most of the flyover for example, mouchak-malibagh flyover’s objective was fast movement of traffic but these flyovers fall under two signals, negating the objective entirely. The responsible people with the construction of flyovers never check if these objectives are fulfilled.”

The final draft of the revised strategic transport plan (RSTP) has been drawn up. It is a multi-layer plan for the next 20 years and it will require multi-billion-dollar investments. From what has been published in the media, the investment portfolio for RSTP will require Tk 2,600 billion to develop the seven mass transit systems and expand road network up to 1,200 km; the city could stand to save Tk 0.5 billion a day from an improved traffic management system, the lack of which costs Dhaka Tk 194 billion per year.

The Dhaka Transport Coordination Authority (DTCA) is the authority that is overseeing the strategic plan and its implementation, which is receiving technical support from Japan International Cooperation Agency (JICA). While there are a great many benefits the capital city would get from the proper implementation of the revised RSTP, there appears to be trouble brewing. Going by what has been printed in a leading English daily on November 11, we understand that DTCA has approved construction of a new flyover from Rajuk's Jhilmil project to Shantinagar crossing.

This plan is in contradiction to the revised RSTP. Indeed, if we are to take what has been published in the report at face value, the proposed project will create more problems than it will solve. The construction of the new 13 km flyover will cause damage to the existing road networks by taking away major portions of land. It's proposed route will come into conflict with the route selected for metro rail transport MRT-6 at Paltan crossing and the gap between the new flyover will be situated a mere 200 metres from the ramp of the Malibagh-Mouchak flyover that is in advance stages of construction. The JICA team has apparently proposed that the new flyover, if it is constructed, should be diverted from the Babubazar area towards Postogola so that it may link-up with the Dhaka Elevated Expressway at Kamlapur railway station.

The revised plan will introduce five MRT lines and two bus rapid transport (BRT) lines. The plan envisages six expressways, three ring roads and eight radial roads and includes the projects: Dhaka Elevated Expressway, Dhaka-Ashulia Elevated Expressway, Dhaka

Chittagong Expressway, Dhaka Sylhet Expressway, Dhaka-Mawa Expressway and Dhaka Mymensingh Expressway. If we understand it correctly, the revised RSTP is the product of extensive exchange of views among multi-stakeholder groups. And various scenarios have been taken into consideration that will help promote an efficient urban-transportation development plan for Dhaka city up to 2035. This brings us back to the question of the construction of a flyover that was not in the lead up to the RSTP plan and has been adopted in contravention to DTCA's own plan of action for road transportation development up to 2035.

The revised RSTP has been many years in the making. The inclusion of a project that has no part in the extensive network of roads-and-rail plan makes us wonder why it has been approved in the first place. From the looks of it the decision to go for this controversial flyover has been made on political grounds and not technical ones.

“But the bigger question we would like to ask is whether we are ready to jeopardize the strategic road transport plan for the next two decades to include a lone flyover that could derail major portions of the RSTP. If that is the case, then there is nothing more to be said.”

Initial Coding

- Lack of accountability
- Project goal doesn't meet after implementation
- Decisions made on political grounds, not technical ones.
- Project plans doesn't comply with Revised STP

Memo 4

Interviewee 5 and 6

07/18/2018

This interview was the longest. The interviewee is involved in MRT project, thus a comprehensive background of MRT project has been gathered from the interview. Moreover, how flyovers are obstructing the potential of MRT have been discovered from the interview. The inconsistencies and disorganized nature of the administration have been revealed.

Can you briefly describe the process of decision-making in flyover construction projects?

STP was approved in 2005, but implemented in 2008. Government of Bangladesh formulated Strategic Transport Plan (STP) with collaboration with World Bank for Dhaka Metropolitan Area (DMA). The STP proposed three lines in Bus Rapid Transit (BRT) and three lines in Mass Rapid Transit (MRT) were required.

They proposed in STP for 3 MRT lines and 3 BRT lines. But for lack of funding and on priority basis MRT and BRT weren't implemented. The feasibility study was ongoing still. To solve the immediate traffic congestion problem, government had to take flyover projects. If they would take the BRT and MRT proposals seriously, we wouldn't need to construct these flyovers. BRT-3 has been designed in detail by World bank. BRT-3 line is in Dhaka North City Corporation from Gazipur to Airport. It is funded by Asian Development Bank and Government of Bangladesh. It's implementation will start from 2020. MRT line 6 is in third phase. The route of the MRT line is from Pallabi-Mirpur-Sheorapara-Kazipara-Agargaon-Bijoy Sarani-Farmgate-Karwan Bazar- Shahbagh- TSC-Secretariat building. Total length is 20.1 km. In special consideration, the timeline to complete the implementation target for this MRT line is – 2020. It has two phases, one phase from Uttara-Agargaon to be finished by 2019, and Agargaon-Motijheel is 2020. Kuril Flyover was suggested in STP, also Zillur Rahman flyover which was actually designed for the overpass, like Banani overpass. But with time and demand of increasing traffic, it shifted to flyover. Hanif Flyover and Moghbazar flyover weren't suggested in STP, as they were very short project unlike metro. So, the flyovers being constructed without proper consent from DTCA, and without proper planning from transport agencies. As of administrative regulation, RAJUK and LGED aren't supposed to be responsible in flyover or any kind of infrastructure development of this size. But, they did for the direct command from cabinet and DTCA couldn't do anything but to approve them.

Hanif flyover was a PPP program, operated and managed by Orion Infrastructure LTD. Dhaka City Corporation was authorized by Bangladesh Govt. to take up the job through private sector participation. The job was awarded to Orion through competitive bidding. The decision of giving the authorization to Dhaka City Corporation came from the Ministries of Cabinet, whereas the decision-making responsibility is ideally among DTCA. It began without proper future planning, and now it contradicts with on-going MRT line -6.

RSTP started in 2016, to 2035.

The MRT project has undertaken to overcome the city's extreme traffic congestion, and strong policies to this end are essential. There is a desire to introduce the bold, integrated traffic management policies proposed in the Vision.

As population in Dhaka is increasing exponentially, do you think the city needs more flyover projects to tackle the growing traffic congestion?

Government has a plan to construct two more flyovers at Daur and Gabtoli points for reducing traffic gridlock in Dhaka. They will develop Teromukh-Abdullahpur-Daur-Birulia-Gabtoli-Babubazar-Postogola-Fatullah-Chasara-Demra route under Dhaka Circular Route (part-2) surrounding the capital city and construct two flyovers at the Daur and Gabtoli points of the proposed route. The feasibility study and detail design of the flyovers are now underway. In addition to this, a 700-meter-long flyover will be built at airport turning point on Banani-Jaydebpur highway under Greater Dhaka Sustainable Urban Transport Project and another 600-meter-long six-lane flyover will also be built at Jasimuddin turning point. But no flyover will be built in the city under Road Transport and Highway division. Target to complete the construction work of MRT line 5 is in 2028, and other phase of MRT line is in 2025. They all the financed by JICA, under engineering service loan.

How this alternative solution as flyover construction has been chosen? What were the key criteria for choosing this alternative?

Among all the projects, flyover construction projects were given more priority in Cabinet by ministries. The reasons for having more priority to construct flyover than MRT, BRT lines are inadequate funding and prolonged feasibility study. Flyover projects are far cheaper and easier to build than MRT projects. Also, government had selected other agencies and legislative body other than DTCA to implement these projects who were not supposed to do these infrastructure project works. For example, Malibagh-Moghbazar flyover was done by LGED, who are actually responsible to work on rural road with maximum length of 300 km. Again, Mayor Hanif Flyover was done by RAJUK, who are mainly responsible in doing urban area plan and Detail Area Plan (DAP).

Is there anything you would have done differently (may be not mentioned in the STP) to improve the current traffic congestion in Dhaka?’

Recently, I am working on a project named- “Bus Sector Reform”, where all the bus organization and owners will be combined under one authority. Dhaka has many numbers of bus owners and companies which actually reduce bus operation and capacity on road. Different bus companies have become very competitive on street, which is impeding natural traffic flow, creating more congestion. Many accidents have been occurred due to this situation. Also, we are working on ‘Dedicated BRT lane’ to increase the traffic speed, and reduce impediments. Moreover, we lack research, information and technology on accident and post-accident emergency planning.

Initial Coding

- Priority given from Cabinet
- Inadequate funding
- Prolonged Feasibility Study
- Ineffective organizational framework

Solution

- Bus Sector Reform
- Dedicated BRT lane
- Decentralization of Administrative offices

Issues with Dhaka's traffic

- Too many intersections, and they are complicated
- Diverse vehicle
- Lack of education, and training

Memo 5

Interviewee 7

07/19/2018

How this alternative solution as flyover construction has been chosen? What were the key criteria for choosing this alternative?

We know, for Dhaka MRT would be a good solution to tackle this millions of people and traffic. But, government couldn't implement it before as it was mentioned in STP/RSTP. Hence, they implemented flyover projects as a quick and easy solution to deal with the traffic gridlocks.

In Revised Strategic Transport Planning (RSTP), many projects being proposed to solve traffic congestion in Dhaka, but the time to revise the projects are long. As, MRT and BRT projects were extensive in scale, they needed extensive study and revision as well. But, government also needed some projects to deal with the emerging traffic congestion. Hence, flyover projects came in handy in terms of construction duration, feasibility study, financial aspect and availability of technology.

Budget limitation is one of the main reasons for taking the flyover projects. The fund for flyover construction is way too lower than constructing a MRT or BRT line. Also, the scale of flyover is smaller than flyover. A flyover is generally for one or two area, but a plan for MRT usually consists of whole city. Thus, land availability is another issue in MRT project. One issue which is very crucial in this country is- they lack co-ordination among agencies. According to DTCA act, DTCA is supposed to do all the decision-making work and coordination among other agencies and projects. But, many projects have been passed without consulting with DTCA, sometimes they are also forced to pass a project in stead of having opposition, these all commands come from Cabinet. Here, Cabinet is the main

decision-maker, DTCA is just a name. They take all the decision just thinking about their own profit

Feasibility study for MRT and BRT projects are taking way too long. As, these projects are huge in scale, there are many factors and criteria, that consultants and agencies need to check. Sometimes, they do studies for several times due to the dynamic characteristics of Dhaka traffic, population is daily increasing, so thus the traffic.

Also, poor forecasting and preliminary studies in strategic plan doesn't match with real life scenario. Incomplete and inadequate studies prior to project approval led to cost escalation.

Poor engineering and technical studies take too much time to implement

These infrastructures involve long planning horizon. Due to lack of modern technology, sustainable long-term solution couldn't achieve.

Also, in STP, flyovers weren't mentioned to be constructed. Instead, mention of over pass was there, but RAJUK (who isn't supposed to do transport planning and implementation) expanded the plan of overpass into flyover. In this way, actually the flyovers have been built in Dhaka even though they weren't proposed or mentioned in STP/RSTP.

There present opposition between Cabinet and transport agencies.

Initial Code:

- Budget limitation
- Land unavailability
- No co-ordination among agencies
- Prolonged feasibility and technical studies
- Preliminary study doesn't match with existing real-life scenario
- Lack of modern technology for large infrastructure
- Govt accepted immediate, short-term cheaper policy
- Flyovers were mentioned as Overpass in STP, changed to flyover by RAJUK
- Poor forecasting

Memo 6

Interviewee 8,9 and 10

07/23/2018

On this day, two urban planners from City office and one transport consultant were interviewed. The interviewees provided more information on the policy documents of transportation projects to help me with the research.

There are Strategic Transport Plan (STP) and Detailed Area Plan (DAP) to guide through the transport infrastructure projects, its rationale and overall transport study of Dhaka. All socio-economic and geographic data in the STP and DAP reports can also be found there. One of the interviewees said,

“Recently, in 2016 DTCA published their latest report reviewing and editing STP, which is Revised STP (RSTP). But personally, I am against RSTP report, as they primarily focused on Mass Rapid Transit (MRT) lines to be established in Dhaka, which is clearly dangerous and not feasible in context of Dhaka. As a planner, I should have been played role to coordinate and I wish I could go against these projects. But there wasn’t any scope or field left, as all the decisions were made in the cabinet from the very beginning, and no scope left for public input. And DTCA and us – the City was almost obliged to sign the approval.”

And, also the organization of agencies are not right, for example – RAJUK (city development authority of Dhaka) or LGED (local government Engineering Department) weren’t supposed to do infrastructure project in this scale on Dhaka, but they did as the order came from Cabinet, and they proposed this proposal with having the financier ready. The cost for one line of MRT would cost 1,60,000 crore BDT, which they think is totally waste. Metro rails are very efficient in transferring mass people around the city and will ease pressure on surface road. But from the socio-economic perspective of Dhaka, they consider Dhaka is still not ready for a metro rail. And also, if they are planning for metro, so why on earth they planned flyover, one of the interviewees said. He added that,

“You may find it weird, as I am a planner, and my cohort are supposed to be in the responsibility of doing the actual planning. But we, planner have little scope in transport infrastructure decision making. We mostly oversee the implementations after being accepted, do the technical aspects, write reports, create maps.”

And the problem with these infrastructures is creating more inequality among citizens. Flyovers will benefit mostly the people who have cars, and the major portion of the population are left off. The existing bus system is awful and risky. Also, these flyovers are responsible in taking half of the level of service area of streets, reducing its capacity to ever growing traffics. So, we are reducing the right of way to solve the traffic congestion, how contradictory is it?

Initial Coding

- MRT and Flyover projects not relevant to the socio-economic context of Dhaka
- Top down decision making approach

- Ineffective organizational framework
- Creating more inequality

Memo 7

Interviewee 11

07/25/2018

The RSTP report is only a “tactical planning” report. They proposed for a \$32 billion project, where we can do many investments in less money and we have a lot in the pipeline. We have now 1.2 times of vehicle than the capacity of road during the peak hour. It was reported in STP 2005 that the average vehicle speed in Dhaka was 16 km/hour, and in 2016 it is 6.4 km/hour. We have seen nothing, but we planned and invested a lot. He said, if we can fix Dhaka, we can fix Bangladesh. We still haven’t achieved disciplined public transit, and overall the whole transport network reduced, and productivity declined. It is obvious that if we expand road, the congestion will also expand. But what we need is to look at demand for sustainable solution. Our policy decision should be on shared system transportation. We should be increasing big transportation and discourage small transportation. For example, dedicated public transport instead of this giant flyover will increase the overall speed of traffic movement in Dhaka. People as well as govt need to realize that public transport is the one sustainable transport, it is either BRT or MRT. I don’t understand how govt is constructing MRT over the flyover route. Pillars of flyover go founded through underground, and they will create obstruction for the MRT lines. So, not only flyovers decreased the right of way in our pressurized traffic streets, it also destroyed the possibility of creating MRT/BRT on that area. In addition to that, flyovers also created demand for small vehicle, as public transport can’t also use flyover, it also eliminated public transport. Flyovers reduced right of ways of street.

It costs more and takes longer to implement a flyover project in Bangladesh, than any other South Asian country, despite the labor and construction materials being comparatively cheap. Though seven flyovers and overpasses have been built in Dhaka in a bid to find a solution to its nagging traffic congestion, these mega structures will fail to achieve the main objectives and those turn into big burdens within years. He complained that that when many countries are dismantling their flyovers across the globe, Bangladesh is building the big structures in an unplanned way narrowing the main roads and spending billions of taka of people’s taxes.

“The government might have got interested in building flyovers to project its big development in front of people as flyover is wrongly perceived as a symbol of development. We’ve been saying for the last 15 years that flyovers can’t be the solution to tailbacks, but the authorities concerned aren’t paying heed to it. Flyovers may ease traffic jam for some years, but ultimately these big infrastructures will become big burdens for the city with the raise in the number of private vehicles.”

Initial Coding

- Lack of vision for sustainable transport
- Showcasing government development

Possible solutions

Shared-system transportation

Memo 8

Interviewee 12 and 13

The interviewees are staff reporter and journalist in local daily newspaper, who already published numbers of articles regarding the transportation issue in Dhaka.

The flyovers that are done in Dhaka, most of them as a temporary solution for the massive congestion. But, now government is thinking about long term and sustainable solution. And again, these flyovers became ‘thorn’ in the sustainable solutions. Bus Rapid Transit (BRT) and Mass Rapid Transit (MRT) are two long-term big projects are taking place to cure the massive problem of Dhaka, and these two terms have been very popular these days. But, we are baffled and disappointed to know that the much-hyped BRT route will actually cover only a 10 km (6.21 miles); where it was supposed to cover 22 km (13.6 miles) of road and relieve much of the traffic congestion of Dhaka city. And the reason why we are getting only half of our sustainable goal is that a number of arbitrarily built flyovers are blocking the BRT and MRT proposed routes. MRT though will go underground for most of the routes, but still it can’t be constructed due to the foundation pillars of flyovers on those routes.

The BRT and MRT solution that DTCA and other experts are proposing and working on would provide affordable, comfortable and safe transport to the people, if and only if could be fully implemented. It is beyond our grasp that the concerned ministry and policy makers would prioritize car-oriented infrastructure over a mass transport facility for a developing

country like us. The flyovers actually cut the route by half for the BRT, which will actually cause more problems for travelers as they will have to get off where the BRT routes ends and look for another mode of transport to get their destination. It really doesn't make any sense.

This dreary situation is directly the result of “poor planning and lack of sustainable vision by the policy makers.” Also, disregard for expert advice regarding the location of these flyovers are one of the reasons for this dismal situation. Despite repeated warnings from experts the Moghbazar-Mouchak flyover was built, even though it was clear that would block the BRT route. A committee was led by technical experts, who recommended dedicated lanes on the Moghbazar-Mouchak flyovers for BRT, the LGED ministry (who are not actually authorized to take these decisions), the implementing authority to build flyover and completely ignored their advice. Instead, the flyover was extended more, further blocking the proposed BRT route.

I hope it would be a lesson to awaken the concerned ministry to the fact that uncoordinated, unplanned projects are destined to cause irreparable damage.

Code:

- Policy makers prioritize car-oriented infrastructure
- Poor Planning activity
- lack of sustainable vision by the policy maker
- Uncoordinated and unplanned projects
- Lack of sustainable vision
- Disregard to expert advice in location of flyovers
- Ineffective organizational and administrative framework