

PRE FEASIBILITY REPORT
FOR
DEVELOPMENT OF MODERN FOOT OVER
BRIDGES
ON PPP FORMAT FOR EACH CITY IN KARNATAKA
TO



INFRASTRUCTURE DEVELOPMENT DEPARTMENT

28th October, 2009

SUBMITTED BY:

KSIIDC-IL&FS Project Development Company (KIPDC)

Khanija Bhavan, 4th Floor, East Wing,
#49, Race Course Road, Bangalore – 560 001



IL&FS | Infrastructure

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I. Introduction

1.1. Background

Infrastructure Development Department (IDD), Government of Karnataka is the Infrastructure arm of the government of Karnataka (GoK) with the objective of facilitating / developing infrastructure projects across the Karnataka State.

The IDD on discussions with project advisors empanelled with the department, including **KSIIDC-IL&FS Project Development Company (KIPDC)** has identified a pipeline of infrastructure projects to be taken up across the State. For optimum utilization of the State Government's fund resources, the IDD has proposed to explore the development of the projects identified on Public Private Partnership (PPP) basis.

The IDD recognizes that depending upon the location and other location specific issues, projects at some locations may not be financially viable or attractive to developers for development on PPP basis. IDD also recognizes that certain projects may require Viability Gap Funding (VGF) or other State / Central support.

The IDD has proposed to carry out Pre-feasibility Studies for the set of projects identified for development across multiple locations within the State. While the objective of the Pre-feasibility Study would be to assess the broad project viability for development on PPP basis and to segregate the project that would require VGF or other State / Central support, the IDD has agreed in principle to mandate the project development of the viable projects identified to the advisory agency doing the project pre-feasibility on single source basis at "no cost basis" to IDD. A project success fees as agreeable to IDD would however be permitted to be charged and recovered from the selected developer for the project.

The project development for projects requiring VGF would be bid out based on Ministry guidelines. The advisory agency that carried out the project pre-feasibility study would be eligible to participate in such bids.

Vide **letter No. ID/89/ITS/2008[Part-I] dated 18th March, 2009**, the IDD has mandated KIPDC to undertake the Pre-feasibility study for "**Development of Modern (Mechanised) Foot Over Bridges on PPP format for Major cities in Karnataka**"

1.2. IDD's Objective

IDD's objective towards preparation of the Project Pre-feasibility is:

- To explore the possibilities of development of the projects identified on Public Private Partnership (PPP) basis
- To assess the preliminary project viability for development on PPP basis and to segregate the project that would require VGF or other State / Central support
- To identify the project stakeholders including the project sponsoring department and advice them on taking up the projects
- To explore project viability for implementation in multiple cities on a replicable model
- Mandate the viable projects to the respective project advisors for project development
- Development & time bound implementation of all projects of the government with private sector investment
- Development, operations and maintenance of the projects in a planned manner with modern amenities and requisite supporting infrastructure by reputed developers without utilizing Government resources of manpower, funds, etc
- To structure a viable and bankable project amenable for PPP and explore project funding through Private Sector Developer
- To expedite project implementation by leveraging private sector efficiency

1.3. Role of KSIIDC-IL&FS Project Development Company (KIPDC)

The Role of KIPDC while carrying out the Pre-feasibility Studies has been to:

- Conduct project pre-feasibility study for development of the proposed project on PPP at the identified locations and include the project concept, need for the project at the location, preliminary market / demand assessment, broad financial feasibility / viability, implementation framework, recommendation of nodal agency for the project at individual locations, role of nodal agency & IDD and way-ahead.
- The Pre-feasibility essentially focuses on the viability of the project on PPP with / without State / Central Govt. support, segregation of projects / locations requiring VGF support and project development approach for projects proposed to be taken up for project development by KIPDC.

- The Pre-feasibility study has been carried out with location analysis and assessment of viability for development at multiple locations across the State.

1.4. Approach & Methodology

Activities required to be carried out by KIPDC would include:

- Development of project concept
- Desk study for location(s) analysis, review of statistic / data already available
- Interact with the head of respective Department / Deputy Commissioner
- Co-ordination for correspondence by KSIIDC / IDD with respective Deputy Commissioner's for additional information, shortlisting of locations, etc
- Preliminary project structuring and viability assessment
- Summarizing of the Pre-feasibility assessment in the form of a report alongwith recommendation to KIPDC / IDD
- Preparation of requisite presentations to IDD

As a part of the project documentation, KIPDC would submit the following to IDD:

- 1) Inception
- 2) Draft Pre-feasibility Report
- 3) Presentation on Draft Pre-feasibility Report
- 4) Final Pre-feasibility Report
- 5) Presentation on Final Pre-feasibility Report

II. Infrastructure in Karnataka

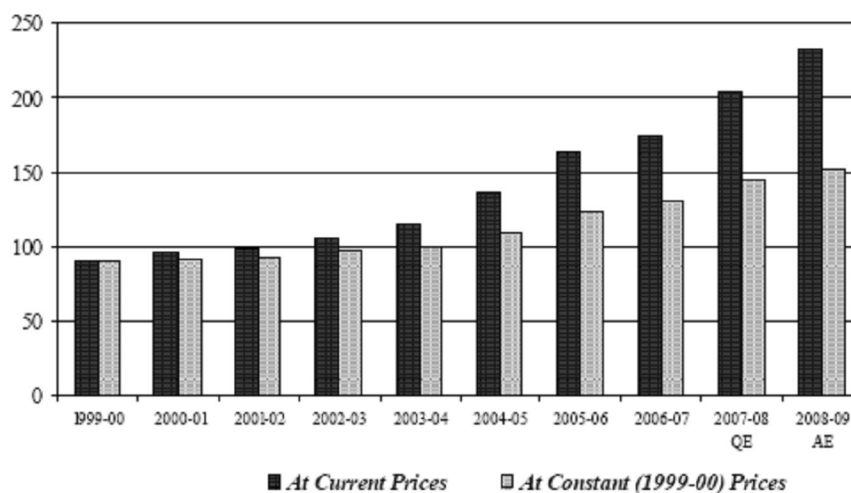
2.1 Overview

Karnataka is India's eighth-largest State, both in terms of area and population and is best known as India's IT powerhouse or the Silicon State of India. Karnataka is also among the leaders in economic growth in the Country and the services sector contributes the maximum to the State's income.

Karnataka's capital city, Bangalore, is known as the 'IT Capital of India' and is the fourth largest technology hub in the World. Karnataka's investment in infrastructure is the highest among all the states in the country and several mega projects are underway to upgrade its existing infrastructure to world-class standards. The state was first in India to set-up a Software Technology Park (STP) as early as 1991. Today, it has the country's best telecommunications infrastructure ensuring high bandwidth connectivity to global destinations.

Karnataka, which had an estimated GSDP (Gross State Domestic Product) of about Rs. 2152.82 billion (\$ 51.25 billion) in the 2007-2008 fiscal year, is one of the more economically progressive states in India.

KARNATAKA
STATE INCOME (in 000 crores)



The State's economy largely depends on agriculture. A sizeable 71% population of the state is engaged in farming. The state is the largest producer of coffee, raw silk and sandalwood in the country and also adding considerably to the horticulture production of the country. The cottage and mineral based industries also add a good percentage of revenues to the state.

Karnataka has become one of the country's global economic players owing to its various industries in the field of electronics, software, biotechnology and other small and medium scale industries. The capital city Bangalore (now called Bengaluru) is the silicon valley of India. Most of the global IT companies have their branches in Bangalore and account for approximately 38% of India's software exports which amounted to revenues of about \$9 billion in 2006. The software industry is expected to generate US \$20 billion by 2010.

Karnataka also leads the nation in biotechnology. It is home to India's largest bio cluster, with 158 of the country's 320 biotechnology firms being based here. The state also accounts for 75% of India's floriculture, an upcoming industry which supplies flowers and ornamental plants worldwide.

Seven of India's leading banks, Canara Bank, Syndicate Bank, Corporation Bank, Vijaya Bank, Karnataka Bank, Vysya Bank and the State Bank of Mysore originated in this State. The coastal districts of Udupi and Dakshina Kannada have a branch for every 500 persons - the best distribution of banks in India. As of March 2002, Karnataka had 4767 branches of different banks with each branch serving 11,000 persons, which is lower than the national average of 16,000.

Karnataka is the manufacturing hub for some of the largest public sector industries in India, including Hindustan Aeronautics Limited, National Aerospace Laboratories, Bharat Heavy Electricals Limited, Indian Telephone Industries, Bharat Earth Movers Limited and Hindustan Machine Tools, which are based in Bangalore. Many of India's premier science and technology research centers, such as Indian Space Research Organization, Central Power Research Institute, Bharat Electronics Limited and the Central Food Technological Research Institute, are also headquartered in Karnataka. Mangalore Refinery and Petrochemicals Limited is an oil refinery located in Mangalore.

Providing world class infrastructure in the State is one of the next initiatives of the Government of Karnataka in order to keep its pace with the growing Cities in the State.

2.2 Transport Infrastructure in the State

Air transport in Karnataka, as in the rest of the country, is still a fledgling but fast expanding sector. Karnataka has airports at Bangalore, Mangalore, Hubli, Belgaum, Hampi and Bellary with international operations from Bangalore and Mangalore airports. Airports at Mysore, Gulbarga, Bijapur, Hassan and

Shimoga are under implementation. Major airlines such as Kingfisher Airlines and Air Deccan are based in Bangalore.

Karnataka has a railway network with a total length of approximately 3,089 kilometres (1,919 mi). Until the creation of the South Western Zone headquartered at Hubli in 2003, the railway network in the state was in the Southern and Western railway zones. Several parts of the state now come under the South Western Zone, with the remainder under the Southern Railways. Coastal Karnataka is covered under the Konkan railway network which was considered India's biggest railway project of the century. Bangalore is extensively connected with inter-state destinations while other important cities and towns in the state are not so well-connected.

Karnataka has 11 ports, including the New Mangalore Port, a major port and ten other minor ports. The New Mangalore port was incorporated as the ninth major port in India on May 4, 1974. This port handled 32.04 million tonnes of traffic in the fiscal year 2006-07 with 17.92 million tonnes of imports and 14.12 million tonnes of exports. The port also handled 1015 vessels including 18 cruise vessels during the year 2006-07. The inland water transport within the state is not well developed.

The total lengths of National Highways and state highways in Karnataka are 3,973 kilometres (2,469 mi) and 9,829 kilometres (6,107 mi), respectively. The KSRTC, the state public transport corporation, transports an average of 2.2 million passengers daily and employs about 25,000 people. In the late nineties, KSRTC was split into three corporations, viz., The Bangalore Metropolitan Transport Corporation, The North-West Karnataka Road Transport Corporation and The North-East Karnataka Road Transport Corporation with their headquarters in Bangalore, Hubli and Gulbarga respectively.

2.3 Initiatives in Urban Infrastructure

The growth of urban population in India has been extremely rapid. While the total population in India has grown by about 3.5 times in the last century, its urban population has increased almost 9 times over the same period. The increase in the number of million plus cities has particularly been striking. The number has increased from 1 in 1901 to over 50 by the end of Century. The urban population of India is project to be 538 million by 2021, i.e. about 37% of the Country's total population.

Karnataka too faces the challenge to sustain high growth while also improving its Human Development. The four strategic development challenges facing Karnataka are:

- to remain one of India's fastest growing states.
- to move from an average to a high-performing state as measured by the Human Development Index
- to maintain rapid agricultural growth, while reducing the risks faced by the rural community
- to enable north-east Karnataka to catch up with the rest of the state.

Average annual growth rates of Income and Per Capita Income in real terms for all India and major states of India

State	Annual Average Growth Rates (%) during 1999-00 to 2006-07		Per Capita income at Current prices 2006-07 (Rs)	Rank
	Income	Per Capita Income		
Andhra Pradesh	10.9	9.7	29582	8
Assam	9.0	7.4	20166	12
Bihar	10.1	8.0	9702	15
Gujarat	12.5	10.5	37532	4
Haryana	13.7	11.3	49038	1
Karnataka	10.0	8.6	30847	7
Kerala	9.4	8.3	33609	5
Madhya Pradesh	6.5	4.6	16578	13
Maharashtra	10.6	8.8	41331	2
Orissa	11.2	9.9	20240	11
Punjab	8.7	6.9	40566	3
Rajasthan	8.7	6.5	20492	10
Tamil Nadu	8.8	7.9	32733	6
Uttar Pradesh	8.3	6.1	14649	14
West Bengal	10.3	9.0	28753	9
All India	11.2	9.4	29642	

Source : 1. Karnataka : Directorate of Economics and Statistics, Government of Karnataka

2. All India and other States: Central Statistical Organisation, Government of India

Having recognised that with Karnataka having ranked 7th in the Country for growth rates for Income and Per Capita Income, the expectations for infrastructure by its population especially that of urban population would be equally higher, the State aims at providing world class urban infrastructure to its population. The same is identified as one of the key drivers to the uniform growth of the State and its cities in a sustainable manner. Hence, the Government of Karnataka has been taking several initiatives to keep itself at pace with the growing cities and their infrastructure needs with its focus primarily on providing:

- Primary Education
- Health Awareness Programme
- Drinking water

- Roads & Street Light
- Under Ground Drainage and Sanitation
- Solid Waste Management

With the above objectives, the State Government has also initiated several schemes / programs with the objective of creating quality infrastructure including the Karnataka Urban Water Sector Improvement Project (KUWASIP), Karnataka Urban Development and Coastal Environmental Management Project (KUDCEMP), Kalasa-Banduri Nala project, etc. The State Government has also been effectively seeking the assistance under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) for the developments of its JNNURM classified cities.

While there is a lot done, the need for doing a lot more in providing basic urban infrastructure needs has been noted by the Government of Karnataka. Considering the same, the State Budget 2009-2010 has identified the development of Urban Infrastructure as the one of the Priority Sectors and has earmarked Rs. 7,367 Crores (approx.) for the development of the same including that for Bangalore City.

Keeping in mind its objective to remain as one of India's fastest growing States, the State Government also looks forward in providing other world class ancillary infrastructure and services viz: parks, urban recreational and entertainment facilities, community centers, parking plazas, markets, pedestrian tracks, foot over bridges, etc that would help developing all its cities in a sustainable manner.

2.4 Traffic & Congestion Scenario in growing Cities

Most cities are characterized by high densities, intensely mixed land use patterns, short trip distances and high share of walking and non motorized transport. The spatial spread of most cities has been changing and comprise of the old core areas (usually congested) and the land use mixed. Most cities also have the central core and more than one Central business District (CBD).

The cities of Karnataka are no different in their pattern of spread. With the rising number of vehicular population alongwith the city's growth and rise in per capita income, high volumes of vehicular traffic and congestion is presently the focus for attention in most tier –II cities.

Number of motor vehicles under different categories 2005-2006 to 2008-09

Item	('000s)			
	2005-06	2006-07	2007-08	2008-09 (31-10-08)
1. Motorcycles	4512.91	4972.75	5269.31	5703.51
2. Motorcars	635.21	731.27	774.07	874.21
3. Jeeps	41.99	45.16	45.34	46.12
4. Auto rickshaws	213.72	242.69	248.93	268.21
5. Omnibuses	54.81	66.19	68.38	75.89
6. Motor cabs	39.29	49.68	57.65	61.38
7. KSRTC buses	30.22	34.08	36.47	19.70
8. Private buses	9.80	8.22	7.35	8.18
9. Goods carriages	219.20	247.29	254.12	286.78
10. Tractor	166.69	195.78	209.66	221.25
11. Trailers	167.62	185.80	200.15	208.02
12. Others	128.91	160.80	164.00	251.90
Total	6220.37	6939.71	7335.43	8025.15

Source: Motor Vehicles Department

With limited scope for road widening, providing signal free and smooth flowing traffic especially in CBD areas is a concern that most cities in Karnataka desire to address. A consequence to the inflation in the traffic scenario in cities has been the risk to pedestrians. Pedestrian safety and facilities has been identified by the Government of Karnataka as one of the most neglected areas presently that need to be appropriately addressed.

III. The Project Concept

3.1 Background

With the expansion of transport and communication facilities, availability of excellent infrastructure and vast manpower resources across Karnataka, the State has been quick in tapping the potential of areas beyond the confines of Bangalore and other urban centers.

Mysore, Belgaum, Hubli-Dharwad, Bellary and Mangalore constitute the new avenues for investment and growth other than **Bangalore**. The State is committed to the holistic development of these areas as the potential high growth avenues for investment, industrial development and wealth creation.

Net District income in Karnataka at current prices - 2006-07

(ತಾತ್ಕಾಲಿಕ)
(Provisional)

Sl. No. ಕ್ರ. ಸಂ.	ಜಿಲ್ಲೆ	ಉದಾಯ (ಒಟ್ಟು ರೂಗಳಲ್ಲಿ)		ತಲವಾರು ಉದಾಯ (ರೂಗಳಲ್ಲಿ)		DISTRICT
		ಒಟ್ಟು Gross	ನವೀಕರಣ Net	ಒಟ್ಟು Gross	ನವೀಕರಣ Net	
1	ಬಾಗಲಕೋಟೆ	447897	396063	25296	22369	Bagalkot
2	ಬೆಂಗಳೂರು	5912286	5078144	84380	72476	
3	ಬೆಂಗಳೂರು (ರೂ)	765421	658367	37954	32646	
4	ಬೆಳಗಾವಿ	1163982	1013370	25768	22434	
5	ಬಿಜಾಪುರ	1094095	933027	50356	42943	
6	ಬೀದರ್	309018	271490	19190	16860	Bidar
7	ಬಿಜಾಪುರ	432736	382320	22344	19741	Bijapur
8	ಚಾಮರಾಜನಗರ	191445	170149	18499	16441	Chamarajanagar
9	ಚಿಕ್ಕಮಗಳೂರು	390205	345940	31908	28288	Chickmagalur
10	ಚಿತ್ರದುರ್ಗ	373107	326814	22934	20088	Chitradurga
11	ದಕ್ಷಿಣ ಕನ್ನಡ	1025583	877133	50422	43124	
12	ದಾವಣಗೆರೆ	534988	469195	27868	24441	Davanagere
13	ಧಾರವಾಡ	639497	562254	37191	32699	
14	ಗದಗ	246249	214701	23641	20613	Gadag
15	ಗುಲ್ಬರ್ಗಾ	752335	663746	22419	19779	Gulbarga
16	ಹಾಸನ	445240	396258	24127	21473	Hassan
17	ಹಾವೇರಿ	374781	325299	24297	21089	Haveri
18	ಕೊಡಗು	278132	252926	47301	43015	Kodagu
19	ಕೋಲಾರ	622260	545905	22892	20083	Kolar
20	ಕೊಪ್ಪಳ	399372	338245	31152	26384	Koppal
21	ಮಂಡ್ಯ	390154	348877	20639	18455	Mandya
22	ಮೈಸೂರು	933431	815139	32975	28796	
23	ರಾಯಚೂರು	371020	329595	20731	18416	Raichur
24	ಶಿವಮೊಗ್ಗ	516776	457885	29354	26009	Shimoga
25	ತುಮಕೂರು	618389	537861	22321	19415	Tumkur
26	ಉಡುಪಿ	439825	389676	36895	32688	Udupi
27	ಉತ್ತರ ಕನ್ನಡ	424010	373775	29226	25763	U.Kannada
	ರಾಜ್ಯ	20092235	17474155	35469	30847	STATE

ಆಧಾರ : ಆರ್ಥಿಕ ಮತ್ತು ಸಾಂಸ್ಥಿಕ ನಿರೀಕ್ಷಿಸಲಾಯಿತು, ಬೆಂಗಳೂರು
Source : Directorate of Economics and Statistics, Bangalore



Consequent to concerted efforts at augmenting all aspects of infrastructure, connectivity and administrative support, the new corridors of growth are poised for great times - a trend that is already evident with the entry of blue chip companies into these areas.

This proactive approach of the State has in effect opened up new corridors for growth and development - thus offering investors many more options. Some of the stated development and initiatives from the Karnataka Government that are envisaged to increase the concentration of population in Tier 2 cities of the state:

- The 'Karnataka Vision 2025' states: To enable balanced development of the state and a more equitable distribution of economic activities, creation of world-class infrastructure (power, water, sanitation/waste disposal, highway access, local roads, rail & air access) is essential at multiple urban locations. The government should invest in such infrastructure at "Tier-2 cities" such as Mysore, Mangalore, Hubli-Dharwad, Belgaum, Bellary, Raichur, and Gulbarga.
- To give a thrust to the new government's policy of developing tier II and tier-III cities as magnets for technology companies, the IT industry is asking for a special investment of Rs 500 crore each in Mysore and the port city of Mangalore in three years.
- The Karnataka Government has urged IT companies to shift to other Tier II cities in Karnataka like Mysore, Mangalore, Hubli and Gulbarga. Some of the companies like Infosys, Wipro, Mphasis have all set up units in Mysore, Mangalore, but the focus need to also shift to other cities like Hubli, Hassan, Gulbarga to see an overall development throughout the Tier II cities of the state.
- The Karnataka state government initiated the idea for a high speed passenger corridor that'll connect Bangalore-Hubli in 2 hours, Bangalore-Mysore in 40 minutes. This will perhaps give stimulus to Hubli and Mysore, by increasing connectivity, so that they can develop as economic centers and act as meaningful alternatives to Bangalore.

The central government has an aspiring industrial corridor plan & under the Delhi- Chennai industrial corridor. The main aim of this corridor is the overall industrial development and ease in logistics. 100 acres at Halga on the NH 4 has been reserved for Agri Food processing. 70 acres already allotted for a Textile park in Waghvade on the Belgaum – Khanapur road.

These Industrial corridors would observe immense growth in population and infrastructure in the coming years.

- An Integrated IT-BT-Health city is envisaged for the twin cities of Hubli-Dharwad to be set up under a public-private partnership. For the northern cities of Belgaum and Gulbarga, it wants 'electronic cities' which will help generate large-scale local employment for business process outsourcing companies.

The major cities of Karnataka are undoubtedly one of the fastest growing cities in Asia and also one of the most sought after cities in India by people, companies, multinationals and tourists. The massive growth that the cities have witnessed in the last decade is a clear indication of these cities being developed to be at par with the most modern cities in the India. The population of urban cities in Karnataka has grown enormously; foremost being Bangalore city.

Mysore, Mangalore, Hubli, Dharwad, Belgaum, Gulbarga and Bellary have been identified to be the next emerging and fast developing cities other than Bangalore in Karnataka.

3.2 Need for Pedestrian Friendly Infrastructure

With several other initiatives of the State Government for uniform development of the tier II cities of Karnataka, the Urban Local Bodies (ULBs) have also been gearing themselves to keep pace with the rapid growth of the cities and provide sufficient urban infrastructure in time. While the priorities of these ULBs is to provide basic infrastructure viz: Water & Sanitation, Roads, etc., the local bodies aspire to parallel develop other urban facilities.

Taking cognizance of the limited resources and the utilization of the State's budgetary provisions towards priority works, the ULBs often fall short of resources for providing other requisite infrastructure.

The Government of Karnataka envisages creation of state-of-the-art standardized infrastructure and public welfare facilities in major cities of Karnataka, with a principle view to establish as an user friendly and global cities. Such infrastructure and facilities are required to be developed across sectors and requires urgent prioritization of likelihood projects and action agenda.

Along with the population the cities have also seen great improvements in its roads and other city Infrastructure. Several flyovers have come into existence in the last few years easing the traffic and making travel easier, while there is still a lot to be done with regards to the tedious traffic and safety of the pedestrians.

Some of the unresolved issues over the years have been:

- Aim to curb casualties on the roads
- Reduce/eliminate signals and hence reduce travel time
- Increasing the mobility of people
- Solution to Increasing traffic jams during peak hours of travel within the city
- Decreasing mode share of public transportation and increase in private automobiles
- Economical way of sustainable transportation

A lot of concern has been expressed over the years on the congestion issue with Government launching several initiatives to improve its traffic (Building several Roads, Flyovers etc). Though the scenario has improved, there is still a lot to be done in these cities.

One of the unresolved issues over the years has been that Cities including Bangalore lack good pedestrian facilities. Pedestrians have to compete with vehicles, hawkers and encroachment to gain space. According to the facts, nearly 40% of the road casualties in Bangalore are of pedestrians. Improving footpaths facilities are very economical way of sustainable transportation, which have been often neglected. Despite the respective City administrations proactively working in improving footpaths & eliminating hawkers, pedestrian crossings are very rare to find on city roads. The urban population of the city deserves better infrastructure for pedestrians viz: Crossways, Pedestrian Cross Table Tops, Pathways, Foot over Bridges, Skywalks, etc.

3.3 The Project Idea

Accidents and the fatalities on road are the result of inter-play of a number of factors. Road users in India are heterogeneous in nature, ranging from pedestrians, animal-driven carts, bi-cycles, rickshaws, handcarts and tractor trolleys, to various categories of two / three wheelers, motor cars, buses, trucks, and multi-axle commercial vehicles etc.

The absolute number of vehicles in Karnataka has increased from 3.06 lakhs in 1951 to 80.25 million in 2009. The vehicle population has been steadily

increasing with the pace picking up significantly since the Eighties. Increase in vehicle population in the face of the limited road space used by a large variety of motorized and non-motorized traffic has heightened the need and urgency for a well-thought-out policy on the issue of road safety. More than eighty thousand people are killed and around four lakhs injured in about four lakhs reported road accidents in the country every year.

Pedestrians and two-wheeler riders are some of the most vulnerable road users in the country. A table depicting the accident related deaths of pedestrians and two-wheeler riders in the past few years is given below:

Category	2001	2002	2003	2004
Pedestrians	N.A.	11772	8799	8405
Two-wheeler riders	12513	13259	13570	15963
Children below five years	N.A.	N.A.	1128	1127

Source: Ministry of Shipping, Road Transport and Highways, Govt. of India

The traffic scenario in the cities are expected be more complex in the years to come, making it even more difficult for pedestrians to cross roads safely.

Safety of pedestrian being the concern of most cities today, solutions to providing safe and efficient pedestrian crossings have been explored in this pre-feasibility study.

3.4 Solution for Pedestrian Crossings

3.4.1 Pedestrian Crossings and Table Tops

Pedestrian crossings and table tops are the most commonly adopted options by the City Administrations of most Cities. However, with the growing traffic scenario of the Cities, conversion of two way roads to one ways and widened road widths this option has proved to be unsuitable due to:

- Need for installation of Traffic Signal at the location, thus blocking free movement of traffic

- For most widened roads, pedestrians find the time made available is tight for crossing.
- Pedestrians tend to run across the road against the moving traffic
- Pedestrian accidents are more seen on pedestrian crossings

3.4.2 Pedestrian Subways

The pedestrian subways have been often used in major cities as an underpass facility for pedestrians on busy traffic road intersections. Subways are however the least preferred options by city administrations as well as pedestrians due to its inherent shortfalls such as:

- The execution time and inconvenience caused to normal traffic flow during the construction period
- Shifting underground utilities like water lines, drainage lines and underground cables
- The cost of constructing underpass is relatively high, thus making it an expensive affair
- Impact of Ground water table and underground seepage of water / rainwater
- Pedestrian Safety issues
- Subways are more prone to anti-social acts and hence considered unsafe

3.4.3 Foot Over Bridges (FOBs)

The traffic scenario in the cities are expected be more complex in the years to come, making it even more difficult for pedestrians to cross roads safely. Foot Over Bridges (FOBs) have been considered as the ideal option to facilitate pedestrian crossings World Wide. The Municipal Corporations of several cities have already been contemplating to provide FOBs as pedestrian facilities considering the following few key advantages:

- Improved pedestrian safety
- Reduced traffic congestion
- Signal free & Smooth traffic movement

- An easier option in terms of its construction period, cost, pedestrian safety and the ease with which the same could be erected on busy city roads, as compared to the alternative of sub-ways.

but have not been able to implement the same due to:

- Pedestrians not preferring to climb the FOBs
- Requirement of large capital investment by the Corporations

3.4.4 Mechanised Foot Over Bridges (MFOBs)

The Mechanized FOB's are upgraded foot over bridges with faster access through Escalators and Elevators to ensure safety and convenience for pedestrian crossings. MFOBs are considered as the most preferred option for pedestrian crossings that address also reasons attributable to failure in success of foot over bridges.

With the relief from climbing up in an MFOB vis-à-vis the previous generation of FOBs, pedestrians have been noted to welcome the facility and accept the same as means for crossings.

MFOB's have been successfully implemented in cities like Hyderabad and Delhi and have proved to be an effective option for minimizing casualties on road.

IV. Mechanised Foot Over Bridges on PPP

4.1 Mechanized Foot Over Bridges (MFOBs)

The Mechanized FOB's are upgraded foot over bridges with faster access through Escalators and Elevators. The objective of Mechanised FOB's is to provide convenience for the pedestrian and to promote the use of such infrastructure provided by the city urban bodies. Pedestrian facilities are required to be developed in a manner that its considered as an easier option by the pedestrian compared to the option of walking across the congested roads. To facilitate the idea of safety, speedy mobility of people and to minimize accidents/casualties, the development of Mechanised FoBs has evolved as an effective infrastructure facility required at congested road crossings.

MFOB's have been successfully implemented in cities like Hyderabad and Delhi and have proved to be an effective option for pedestrian crossing. The Key Advantages of Mechanized FOBs being:

- Relief from climbing up with the erection of elevators / escalators – hence easily accepted by pedestrians
- Eased access and safe corridor (illuminated) for pedestrian crossing at odd hours
- Barrier free access
- Accessibility to facilities like ATM's, Telephone booth & kiosks within the FOB
- Constant revenue stream for the government
- Reduction in travel time / smooth traffic movement

4.2 PPP in Infrastructure Projects

The Governments encourage the implementation of Infrastructure Projects through a Public Private Partnership (PPP) model. The PPP approach allows an ideal combination of public interest with private sector efficiency and sensitivity to market requirements. Private Sector tends to be responsive to market requirements and with a motivation to optimize returns brings in efficiency and accountability. For Operation, Maintenance and Management, Private Sector efficiency can also be tapped through awarding Management contracts, Service contracts and other such arrangements.

In a PPP, while the private sector shall be responsible for financing, executing and operating the facility, Government shall facilitate the development by providing timely clearances and approvals. The Government shall define

minimum development obligations for the private sector, yet leave adequate flexibility for the developer to build the project in response to market demand and hence optimize collective returns.

In order to optimise on the utilization of Government Funds for priority projects, timely implementation of Infrastructure Projects and to offload the operational and market risks, the Government has been promoting the involvement of the private sector on Public Private Partnership (PPP) format in the infrastructure projects. The following are a few advantages of involvement of the private sector in Infrastructure Projects:

- Development & time bound implementation of all priority projects of the government with private sector investment
- Development, operations and maintenance of the projects in a planned manner with modern amenities and requisite supporting infrastructure by reputed developers without utilizing Government resources of manpower, funds, etc
- Focused project development and time bound implementation
- Optimization of commercial benefits to the Government, which could be utilized for funding other unviable projects
- Project funding through Private Sector Developer
- Development of MFOBs on standardized designs

4.3 Mechanised Foot Over Bridges (MFOBs) on PPP

With a large wish list of projects and limited resources for implementation of projects, several State Governments have been developing projects on PPP. With several developers now having developed their skills in developing, operating and managing urban infrastructure projects, most ULBs have been exploring the possibilities for development of their projects on PPP.

Commercial viability being the key to the success of any PPP project, mechanized foot over bridges are known to be the easiest and most viable in the urban sector with the following as main streams of Revenue:

- Revenues from Hoarding / advertisements on FOB surfaces
- Revenues from rentals from Kiosk along / below staircase

The Mechanised FOBs are high capital intensive infrastructure, but yet could be best implemented with the participation of the private sector on a Public Private Partnership (PPP) format.

4.4 Key Revenue Streams for MFOB's on PPP

Since MFOB's are a public facility, the revenue streams for the developer shall need to be pre-defined. Revenue generation would mainly be from advertisement rights and renting of commercial space like kiosks, ATMs, Telephone Booths, Medical Shops etc. demand for the advertisement as well retail outlets being the key, MFOB's at certain prominent junctions / locations could also emerge to be an additional stream of revenue to the ULBs. A demand assessment for each proposed location would however confirm the viability.

4.4.1 Demand for Advertisement Spaces

Advertisement industry has its spread in every aspect of merchandizing. Because of the cosmopolitan trends and global identity, there is immense market for advertisement in major cities and district headquarters. The prime commercial areas of the city are considered as high revenue potential areas while the residential localities/ old city area are considered as low revenue generating areas of the city. Because of the growing advertisement market the street furniture like Bus Shelters, Pay & Use Toilets, FOB's etc. are also used for the advertisement purpose.

4.4.2 Demand Assessment For Commercial Space

Most of identified MFOB locations would fall on the major arteries of the city having commercial development in surrounding areas. The proposed MFOB locations can be explored for creation of spaces for urban needs as well as commercial benefit to make the project more attractive. The commercial spaces could be in terms of kiosks, ATMs, Telephone Booths, Medical shops etc.

4.5 Factors for selection of Cities

As an initiative for improving pedestrian facilities across the State, the Infrastructure Development Department has conceived the development MFOB's across major / congested roads in major cities of Karnataka.

Advertising is the key to the success of implementation of MFOB's on PPP basis. Revenues collected from advertisements along the FOB make the implementation, operations and management of the project an attractive proposition to the private sector.

MFOB's are proposed to be implemented on PPP basis across most major cities in Karnataka, including **Bangalore, Mysore, Mangalore, Hubli, Dharwad, Belgaum, Gulbarga and Bellary**. The viability of the project in terms of potential for revenue from Advertisements at the respective cities is being assessed as a part of this Pre-feasibility study.

4.6 Pre-requisites for identification of locations

While the demand for advertisement spaces in a particular city would establish the commercial viability for implementation of MFOB's in the city, the selection of locations for erection of the proposed MFOB's would be the next critical task. The following parameters would need to be essentially taken into consideration while identifying the individual locations within a City:

- The need for the MFOB at the location
- Road widening plans
- Plans / proposals for construction of flyover / metro at the location
- Availability of space for erection of escalators / elevators on either side of the FOB
- Potential for revenues through advertisements at the location

The following table indicated the Key Parameters to be considered while evaluating locations for erection of MFOB's.

Key Parameter for Evaluation of Locations		
	Parameters	Location details
1	Width of the road	Finalised considering road improvement / widening proposed
2	Width of the Divider	possibility for erection of barricade / central support for MFOB
3	Approx. no of vehicles crossing at every green	
	Peak Hours	Nos.
	Non Peak Hours	Nos.
4	Approx. no of people crossing the Junction	
	Green signal for Pedestrian	Nos
	Red signal for Pedestrians	Nos
5	Waiting time for pedestrians to cross the	Seconds

4.7 Parameters for selecting FOB Locations

A preliminary assessment of the proposed FOB locations would be undertaken and planned to be implemented in a phased manner. The purpose of phasing is to shortlist FOBs based on the technical and spatial feasibility. Based on field observations, few FOBs that can be taken up immediately would be categorized in phases. FOB locations selection would be phased and prioritized based on the following criteria:

- Ease of implementation
- Identified risks – technical, legal, political, etc.
- Proposed Road Development Plans (RDPs) of Town Planning Department

Field surveys and area analysis will be done to finalise the exact FOB locations from the list of identified locations. Based on the pedestrian volumes and the space availability, escalators and elevators apart from the staircase shall be proposed at these locations. The exact locations of the FOBs will be finalised based on the following criteria:

- Proposed Road Development Plans (RDPs) of Town Planning Dept.
- Number of accidents at the given locations due to collision of high speed motorized fleet with the pedestrians crossing the road
- Traffic congestions at a given point/ junction on the road corridors.
- Time taken for pedestrian crossing the road is more than 2 minutes
- High-speed road corridors
- Nearness to bus shelters and the road junctions
- Intensity of commercial activities like CBDs, markets, shopping areas etc.
- Locations of institutional areas like schools, colleges, hospitals etc.
- Location of public places like theatres, exhibition grounds, parks, play areas etc

The proposed FOBs would be envisaged in a manner so as to maximise its market value and meeting the objectives of the client. The proposed FOBs will be positioned as a part of street infrastructure to facilitate the safe movement of pedestrians and to provide the state-of-the-art facilities that would provide eased access to all the pedestrians including the physically challenged persons.

These FOBs would be equipped with modern technological elements like escalator-elevator systems and iconic/ sculptural form adorned with modern materials. Considering the nature of project an architectural prototype (standardized designs) would be provided by the authority or alternately, the developer should follow the standards and specifications developed by the authority while designing the FOB. To make the initiative commercially viable and financially sustainable, advertisement possibilities will be explored.

V. Cities Identified

5.1 Background

As an initiative for improving pedestrian facilities across the State, the Infrastructure Development Department has conceived the development MFOB's across major / congested roads in major cities of Karnataka.

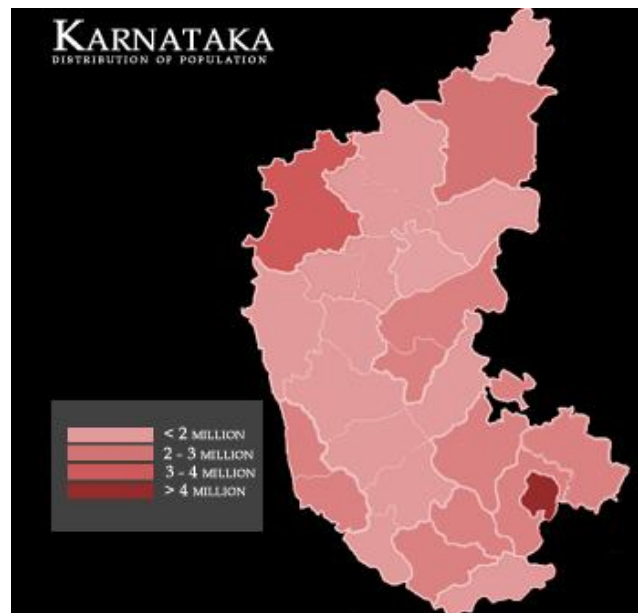
Advertising is the key to the success of implementation of MFOB's on PPP basis. Revenues collected from advertisements along the FOB make the implementation, operations and management of the project an attractive proposition to the private sector.

Mysore, Mangalore, Hubli, Dharwad and Belgaum have been identified to be the next emerging and fast developing cities other than Bangalore in Karnataka

MFOB's are proposed to be implemented on PPP basis across the above major cities in Karnataka. The viability of the project in terms of potential for revenue from Advertisements at the respective cities & specific locations will be assessed as a part of this Pre-feasibility study.

5.2 Basis of City Selection

As per the census of 2001, the industrially progressive state of Karnataka, encompasses a total population of 52,733,958. The state of Karnataka ranks ninth in the population chart of our country.



The following states the Population as from the 2001 Census of India and percentage increase in population for the major districts of Karnataka

Sr. No.	District	Population	% Increase in Population
1	Bangalore district	6,523,110	34.80%
2	Bangalore Rural district	1,877,416	12.21%
3	Belgaum district	4,207,264	17.40%
4	Dharwad district	1,603,794	16.65%
5	Gulbarga district	3,124,858	21.02%
6	Mysore district	2,624,911	15.04%
7	Dakshina Kannada district	1,896,403	14.51%

Accordingly, MFOB's are proposed across most major cities in Karnataka, including **Bangalore, Mysore, Mangalore, Hubli, Dharwad and Belgaum**. These cities have been the fastest growing in terms of various aspects including population and demands better infrastructure. The city profiling for specific city would help in understanding the Infrastructure status and the developments proposed throughout the city. The profiling would help in assessing the viability of the project in terms of potential for revenue from Advertisements as a part of this Pre-feasibility study.

5.3 BANGALORE

5.3.1 An Overview

Bangalore is undoubtedly one of the fastest growing cities in Asia and also one of the most sought after cities in India by people, companies, multinationals and tourists. The massive growth that the city has witnessed in the last decade is a clear indication of this city being developed to be at par with the most modern cities in the world. The population of Bangalore has grown enormously on account of migration of people from all corners of India, neighbouring countries and from countries in the West.

A lot of concern has been expressed over the years on the congestion issue with government launching several schemes to improve its traffic (Building several Roads, Flyovers etc) but unfortunately the scenario still remains the same.

5.3.2 Bangalore City Traffic Scenario

Bangalore today is obviously one of the most sought after cities in the country what with the rapid growth in the IT industry and the rise in the number of job opportunities in the city. With the rising population in the city there is also a corresponding increase in the number of vehicles in the city and a huge increase in the demand on land.

Along with the population the city has also seen great improvements in its roads, highways and other Bangalore Infrastructure. Several flyovers have come into existence in the last few years easing the traffic and making travel easier. What adds to the traffic pressure in Bangalore in particular is that there is very little scope for expansion of roads and the need to use existing roads for smooth movement of vehicles is even more pronounced. It thus becomes mandatory for the administration to ensure better parking & pedestrian facilities. While there is still a lot to be done with regards to the tedious traffic and safety of the pedestrians.

Rapid population growth because of IT and other associated industries in Bangalore led to an increase in the vehicular population to about 1.5 million, with an annual growth rate of 7-10%.

With the increase in population and the expansion of the city, the problem of connectivity of the populace has arisen. Quite obviously personalized modes of transport have grown at a tremendous rate and two wheelers along with the cars almost comprise 90% of the total registered vehicular population in the

city. Two wheelers constitute more than 70% of the total volume, while cars comprise 15%, autos 4% and the remaining 8% includes other vehicles such as buses, vans and tempos.

5.3.3 Impact of growth on Traffic

All or most of the roads are operating above their capacity and the volume: capacity ranges from 1:2, 1:3 and 1:5

Sl. No.	Name of Road	V/C ratio
1.	Nrupatunga Road	3.62
2.	District Office Road	2.51
3.	K.G. Road	2.51
4.	Lalbagh Road	2.67
5.	Puttanna Chetty Road	2.45
6.	Richmond Road	2.26
7.	M.G. Road	2.26
8.	Chord Road	2.51
9.	Tumkur Road	2.62
10.	Sankey Road	1.52

- Travel speed has dropped to 15 kmph during the peak hours
- Insufficient or no parking spaces for vehicles
- Public transport vehicles vying for road space with private modes

5.3.4 Lack of Pedestrian Infrastructure in the City

Bangalore has a decreasing mode share of public transportation and increase in private automobiles. The problem is not insufficient roads as made out by the authorities but the priority given to improve vehicular flow rather than improving mobility of people. The transportation share is nearly 20% of the Bangalore's landuse which simulates international practice, still the congestion sustains in the city.

As per the estimates Bangalore loses out nearly 208 million Rs per day due to congestion. The root cause for congestion can be known from the fact that the 88% of total vehicles constitute only two wheelers and four wheelers, which contribute only 39% of total Trips.

One of the unresolved issues over the years has been that Cities including Bangalore lack good pedestrian facilities. Pedestrians have to compete with

vehicles, hawkers and encroachment to gain space. According to the facts, nearly 40% of the road casualties in Bangalore are of pedestrians. Improving footpaths facilities are very economical way of sustainable transportation, which have been often neglected. Despite the respective City administrations proactively working in improving footpaths & eliminating hawkers, pedestrian crossings are very rare to find on city roads. The urban population of the city deserves better infrastructure for pedestrians viz: Crossways, Pedestrian Cross Table Tops, Pathways, Foot over Bridges, Skywalks, etc.

Bangalore itself is responsible for nearly 10% of all accident-related casualties in Karnataka, with a major share of casualties amongst Pedestrians. Many reasons could be attributed to this cause, one being crossing the busy roads of Bangalore high traffic roads.

5.3.5 Pedestrian Traffic Characteristics

Bangalore city is witnessing considerable pedestrian traffic especially in the CBD areas. With the increase in the commercial activity in some of the important areas like Koramangala, M G Road, Shivajinagar, K G Road etc., there is an increased demand for better pedestrian facilities. The increase in vehicular traffic has given rise to widening the carriageway width to accommodate the vehicles resulting in reduction in the size of the foot paths. This in turn has given room for pedestrians to spill over to the carriageway, thereby affecting the flow of vehicles.

In order to safe guard the interests of the pedestrians in particular, it was decided to carry out pedestrian survey at some important locations where there is heavy inflow of pedestrians. This would give us an idea about the volume of pedestrian traffic which in turn would help us in developing some facilities for the pedestrian traffic. Pedestrian surveys were conducted for 12 hours at 8 mid block and 9 junction locations. The survey was conducted from 8 AM to 8 PM on typical week days. The Table below gives the peak hour pedestrian at major locations. From the analysed data, it is observed that the pedestrian traffic is highest along 9th Main Road (Jayanagar 4th Block) followed by M G Road. It is also observed that the pedestrian traffic is at its peak during holidays / weekends at 9th Main Road (Jayanagar 4th Block), M G Road, Brigade Road and Gandhi Bazaar Road. The volume of pedestrian traffic is maximum between 10 AM and 11 AM in the morning and between 5 PM and 6 PM in the evening.

Volume of Pedestrian Traffic at Mid Block Locations

Sl. No.	Road Name	Pedestrian Volume (12 Hours)
1.	Along Brigade Road (Near Rex Theatre)	5198
2.	Along M G Road (Near Plaza Theatre)	5366
3.	Along Hosur Road (Near Madiwala Police Station)	3426
4.	Along Gandhi Bazaar Road (Near Roti Ghar)	2578
5.	Along CMH Road (Near HDFC Bank)	2273
6.	Along Kuvempu Road (Near Varalakshmi Nursing Home)	1203
7.	Along Hare Krishna Road (Near Shivananda Bus Stop)	1787
8.	Along 9th Main Road (Jayanagar 4th Block near Janata Bazaar)	5797
9.	Mysore Bank Circle	19168

Pedestrian Traffic Volume on Major Junctions

Sl. No.	Name of the Junction	Peak Hour Pedestrian Traffic
1.	Mysore Bank Circle	19168
2.	K G Circle	10761
3.	Ananda Rao Circle	9002
4.	Yeshwantpur Circle	5475
5.	South End Circle	4870
6.	Malleswaram Circle	3579
7.	Toll Gate Junction	2937
8.	K R Circle	2778
9.	Prof. Shivashankar Circle	2114

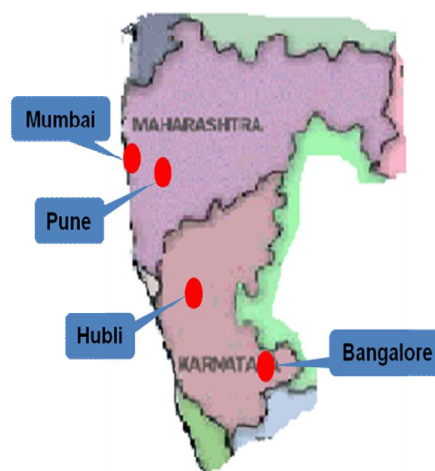
Footpath facilities have been provided by BMP. However, the footpaths in many locations, especially in the commercial areas are occupied or encroached upon by vendors and hawkers resulting in spilling over of the pedestrians on to the road. This in turn results in vehicle-pedestrian conflicts. At many places the footpaths are narrow. Most of the footpaths do not have proper surface which forces pedestrians to walk on roads. Zebra crossings have generally not been provided on busy roads. Heavy pedestrian traffic is observed in the core areas of the city. However sufficient facilities, particularly for crossing, have not been provided for pedestrians. At some locations, Foot over bridges have been constructed. However, these are not being effectively utilised by the pedestrians. This is an aspect which will need priority

consideration. Facilities like subways or sky-walks with lift facilities may be a better option.

5.4 HUBLI-DHARWAD

5.4.1 An Overview

Hubli-Dharwad is the second-largest conurbation in Karnataka after the State capital - Bangalore. Dharwad is a quiet, pleasant, and fast growing city in the northern part of Karnataka, which together with Hubli, 22 kilometers apart, forms a twin city, about 400 km from Bangalore.



While Dharwad is the administrative headquarters of Dharwad District and an important education centre, Hubli is primarily a commercial and industrial centre. It is believed that owing to this diversity and geographical proximity, the State government amalgamated the two cities. The Hubli Municipal Corporation (HDMC) was constituted in the year 1962 by combining the two cities. The twin cities have a population of nearly 8 Lakh (Census 2001) and it covers an area of 202.28 sq kms, with development concentrated in 72.78 sq kms including 45 revenue villages¹ and large number of extensions spread in all the directions. The State Government promotes the industrialisation of the region leveraging its strategic location, good connectivity with metropolitan centres (like Mumbai, Pune and Bangalore), availability of water and forest resources, and labour.

Hubli-Dharwad Fact Sheet	
Latitude & Longitude	15° 21' 0" N and 75° 10' 0" E
Average rainfall	812 mm per annum
Temperature	Maximum of 39°C and a Minimum of 16°C.
Height from sea level	2,580 feet
Combined Population (including rural)	1 ,604,253 (Census 2001)
Population of Hubli-Dharwad	7,86,195
Languages spoken	Kannada, Hindi, English and Marathi.
Literacy Rate	71.61% (Census 2001)
Total Villages Included	45
Total number of households	2, 97,494
Number of families below poverty line	47,160

Source: HDMC and other government agencies

With the tremendous success of the IT/ITES industry in Bangalore, the State government started promoting Mysore, Mangalore and Hubli as favorable IT destinations. Mysore and Mangalore, over the last few years, have emerged as alternative destinations (to Bangalore) for the IT industry in the State. Now, the Karnataka IT Department is focusing on Hubli and Dharwad to this effect. The literacy rate in Hubli is estimated to be 81% (2006 estimate) as compared to the national average of 61%. A large pool of this literate population constitutes educated youth with technical expertise, who would meet the growing demands of skilled manpower in these industries.

Dharwad is the seat of learning with Karnataka University and Agricultural University. There are large number of Arts, Science, Commerce and Law Colleges in the city. Karnataka Medical College, S.D.M. College of Dental Sciences and Engineering and technical institutions are crowning additions to the educational facilities in the city. Due to these educational and industrial facilities, the city attracts considerable floating population.

The city has an advantageous location being surrounded by a number of important historical and mythological places within a radius of about 200 kms. There are important tourist and historical places such as Ghataprabha, Gokak Falls, Soundati Yellamma Temple, Kittur, Badami, Pattadakal, Aihole, Kudalasangam, Bijapur, Bagewadi, Basavakallyan on northern side, on the western and southern sides there are Dandeli, Port-town of Karwar, Gokarn Magod falls, Ulavi, Banavasi, Jog-falls, Shimoga and Bhadravathi, Laxmeshwar and Tungabhadra Dam and on eastern side Hampi, Lakkundi and Mantralaya.

5.4.2 Economy – Hubli- Dharwad

Hubli is an important hub for agricultural and horticultural activity. Cotton, food grains, groundnuts and chillies are major crops cultivated here. Basaveshwar Agriculture Market Yard is amongst the largest agriculture markets in Asia. The Cotton Market of Hubli is also one among the five biggest markets in India. With the establishment of Bhoruka textile mill, NGEF and KMF, the city gathered momentum in industrial development. In order to promote industrialisation, the Karnataka State government has approached companies, such as Infosys, Mahindra & Mahindra to run Special Economic Zones (SEZs) in Hubli. Further, plans are also on for setting up five dedicated industrial clusters to promote industrial development in the State. Overall on

summarizing the above we can say that, though presently the economy is primarily of an agrarian nature but the pivotal focus is now on the development of IT/ITES industry.

There are eight industrial areas including the Growth Centres spread on 3,294 acres of developed land in the district. Some of the notified industrial areas in the city are Gokul Industrial Estate, Tarihal, and Rayapur. In the small scale sector, the main products manufactured are agro, engineering and machine tools, chemical and pharmaceutical. Notable is the production of industrial valves, designed to meet the needs of the chemical and petrochemicals industries. Hubli accounts for nearly 40% of the country's requirement.

Public sector establishment includes the Railway Workshop and Diesel Loco Shed in collaboration with General Motors of USA. Other large industries include TELCO, KEC, KSRTC, NGEF, Kirloskar Warner and Swassey, BDK. The Karnataka Material Testing and Research Centre is the first of its kind research centre that was established at the Gokul Industrial Estate in Hubli, and it caters to the testing needs of North Karnataka. The tests undertaken here include chemical analysis, water / soil testing, physical testing, instrument calibration, etc.

The economy is primarily of an agrarian nature but the pivotal focus is now on the development of IT/ITES industry. There are eight industrial areas including the Growth Centres spread on 3,294 acres of developed land in the district. Some of the notified industrial areas in the city are Gokul Industrial Estate, Tarihal, and Rayapur.

The STPI-Hubli (Software Technology Parks of India – an organization under the Dept of IT, Government of India) has been operational from May 2001, to provide the data communication and incubation services to IT/ITES industry and also to promote the industry. The IT Park Hubli that is situated in the heart of the City is promoted by the Government of Karnataka IT Department and Karnataka State Electronics Development Corporation Limited (KEONICS).

5.4.3 Hubli Dharwad Municipal Corporation (HDMC)

The Hubli Dharwad Municipal Corporation (HDMC) was constituted in the year 1962 by combining the two cities. The twin cities have a population of nearly 1.1 million and it covers an area of 202.28 sq kms, with development

concentrated in 72.78 sqkms including 45 revenue villages and large number of extensions spread in all the directions. The State Government promotes the industrialisation of the region leveraging its strategic location, good connectivity with metropolitan centres (like Mumbai, Pune and Bangalore), availability of water and forest resources, and labour.

There is an excellent inter-city transportation facility between Hubli and Dharwad, as NWKRTC and Bendre Nagara Sarige (a consortium of private bus-owners) jointly cater to the large number of commuters between Hubli and Dharwad. Bus services from the twin-cities are available to most of the parts of Karnataka and neighbouring states. Private bus operators also render their services for overnight travel between Hubli and Bangalore, Mangalore, Pune, Mumbai.

Overall Road Network – Hubli-Dharwad (700 km network)	
Hubli Dharwad twin city distance	22 km
The length of the roads HDMC jurisdiction	630 km
The density of the road in the town	3.29 km per sq m
Per capita road length	0.8 km
The Average width of the road	9.5 m in the town
HDMC road	595 km
National Highway	30 km
PWD roads	40 km

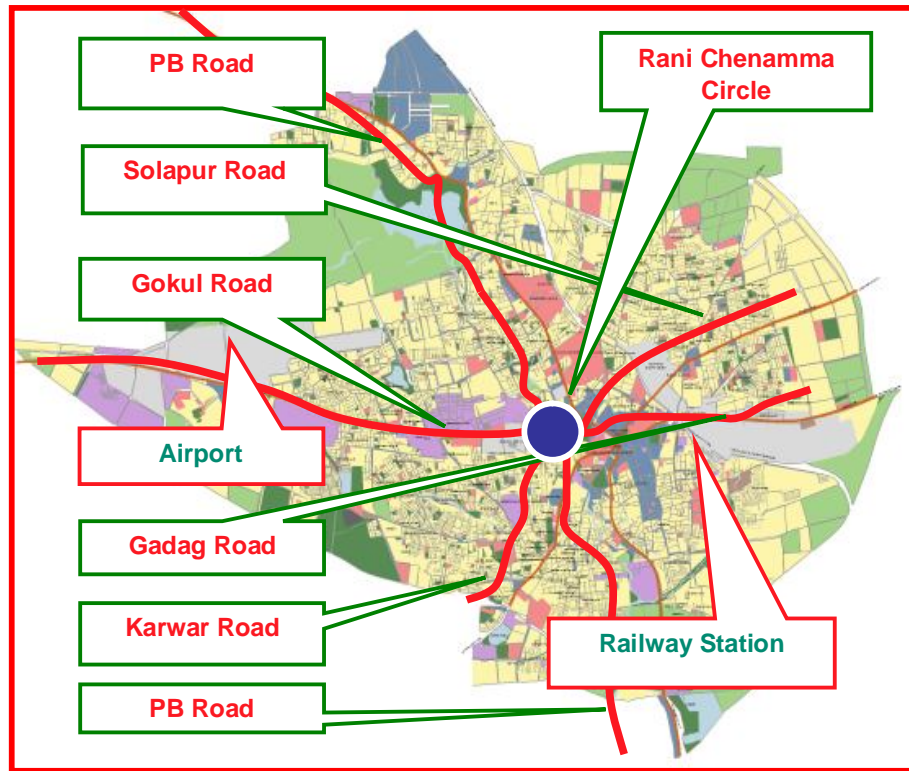
Source: HDMC Research

5.4.4 Traffic Intensive Areas In Hubli-Dharwad

Dharwad: Old P.B. Road, Azad Road, Subhash Road, Corporation Road, Regal Circle, Cosmos Club road, Sangam Theatre road, Vijaya Road

North Hubli: VIP Road, IB Road, New Cotton Market road, P.B. Road, Neeligin, Court Road, Byahatti Plot Road, Swimming Pool Road, New Cotton Market Road, Lamington Road, Old PB Road, Karwar Road.

South Hubli: Station Road, Koppikar Road, Javali Sal, Maratha Galli, Coen Road, J.C. Nagar Road.

Major Roads and Prominent Locations in Hubli:**5.4.5 Pedestrian Problems In The City**

The popular demand for a foot over bridge had gained momentum in Hubli City after the tragic death of an SSLC student who was run over as she was crossing the railway track on her way to the examination centre in the year 2007. The Hubli-Dharwad Municipal Corporation (HDMC) considered the proposal for a subway but could not bare the cost of developing an Over bridge.

The city has a high of traffic from other nearby cities such as Karwar, Goa, Sholapur etc making it a congested cross over city. The pedestrians need a better infrastructure to ensure safety at all times while crossing the busy roads of Hubli Dharwad.

5.5 BELGAUM

5.5.1 Overview

Belgaum (also known as Belagavi) is the headquarters city of Belgaum district and is one of the oldest urban centers of Karnataka, lying at a distance of around 502 km from Bangalore and around 500 km from Mumbai.

Belgaum is an important trade, administrative and education hub of North Western Karnataka. The city has training centers of the Indian Armed Forces and an air base of the Indian Air Force. The city houses a number of industries, including hydro engines, turbines & pressure oils and Indian Aluminium Company (INDAL).

Belgaum is also been known as an Educational Hub with a set up of several professional colleges.

5.5.2 Belgaum - Economic Base

As stated earlier, Belgaum is a multi-functional city with business (trade and commerce), skilled jobs (industries) and administration as the principal sources of employment. Economic base of the city comprises of the following four core sub-sectors:

- Agriculture & agrarian goods trading;
- Wholesale commodity trading-vegetable, fish, wood;
- Heavy manufacturing industries like INDAL, hydraulics, pressure oils; and
- Centre of automotive engineering esp. crank shaft machining.

The city is an important location for vegetable trading, fish, wood & mining resource trading in North Karnataka. Trade flourishes in the city as many areas of the city are dedicated to certain kinds of trade. For example, almost all automobile-related trade and manufacture happens in the Fort Road area of the city. The Raviwarpeth area is known as the wholesale market which sells commodities like grains, tea, etc.

From the early 1970s, Belgaum began developing as an important centre for the manufacture of heavy machine tools, including the manufacture of high pressure oil hydraulics. Rich deposits of bauxite are found in Belgaum district, and have led to the creation of the INDAL for production of aluminium.

Additionally, uranium deposits have recently been found in Deshnur, a small village near Belgaum. The city is also a strong industrial hub for machine shops catering to automotive manufacturing especially in crank-shaft machining. Belgaum has friendly environment for foundry and casting businesses. The geographical location of the city is an advantage since it is situated strategically between Bangalore and Mumbai/Pune to support the major automotive and aerospace companies.

5.5.3 Belgaum Administrative Setup

The city conurbation area is planned and regulated by the Belgaum Urban Development Authority (BUDA). The Belgaum Municipal Corporation (BMC) is the city administrator, which comprises 58 wards under its jurisdiction with an urban population of about 506,480 (Census 2001). The administrative jurisdiction of BMC encompasses an area of about 83.93 sq. km including many urban villages. Significant proportion of the city area forms part of the Cantonment Board Jurisdiction i.e. Defence area. Following table presents the fact sheet of the Belgaum City

Fact Sheet for Belgaum City

City	Belgaum
Administrative Status	District Headquarters
Area	Belgaum Municipal Corporation (BMC): 83.93 sq. km Belgaum Urban Development Authority (BUDA): NA Belgaum Cantonment Board: NA
Population	506,480 (as per 2001 Census) 604,763 (Estimated Population - 2008)
City Administrator	Belgaum Municipal Corporation
City Functions	Trade & Commerce, Industries, Tourism, Medical & Education Centre, Agriculture and Mining
Geographic Location	Latitude: 15° 87' North Longitude: 74° 5' East Altitude: 751 m above the Mean Sea Level Located in between Bangalore & Mumbai National Highway – 4

Connectivity and Linkages	The city is well connected with other parts of the district and state by road and rail. NH-4, NH-4A & SH-20 passes through it connecting the city with Bangalore, Mumbai, Hubli -Dharwad & Panjim.
Temperature	Temperature: Maximum 36°C, Minimum 20°C Rainfall: 125 mm of annual average rainfall
Languages	Regional language: Kannada and Marathi English & Hindi are widely understood
Nearest Airport & Approx. Distance	Sambra (20 km)

5.5.4 Key Infrastructure And Development Initiatives

The GoK has initiated proactive measures to augment and expand the physical infrastructure of the city by developing major infrastructure projects to catalyze economic development of the city. Belgaum would soon get a more advanced airport, a new power station, an international standard exhibition centre amongst many other facilities. Micro level infrastructure projects for better water & electric supply has also been undertaken. Following are some of the major infrastructure development initiatives in the city:

- **Recent Industrial Incentives:** To develop specific sectors, the GoK has setup and IT Incubation Centre at Gogte Institute of Technology, Belgaum and a Science and Technology Entrepreneurs Park at KLE's Engineering College. Karnataka Industrial Area Development Board (KIADB) has setup 8 industrial areas and Karnataka State Industrial Investment Development Corporation (KSIIDC) has setup 5 industrial estates which are fully developed. There is an exclusive auto park to house all auto related industries. The oldest agency in co-operative sector i.e. Belgaum Manufacturer's Co-operative Industrial Estate at Belgaum has developed another 250 acres and provided best quality infrastructure at competitive rates.
- **Communication:** 713 post offices, 189 telephone exchanges, mobile connectivity services by BSNL, Airtel, Hutch, Spice, Reliance and Tata Indicom form the communication hub at Belgaum. Broadband Internet connectivity rules the roost by over 12000 internet installations providing global connectivity. BSNL has undertaken the augmentation of Wi-fi, optical fibre & cellular connectivity in the entire city for better internet & mobile coverage in the city in the near future.

- Power: Belgaum has 87 sub stations with a capacity to receive and disseminate 1625 MW of power. Belgaum is bestowed with TATA Power Limited with 81.3 MV of power generation. A new 110 KVA power station at Udyambag is to be set up at a cost of about INR 185 million.
- Augmentation of Infrastructure for Water Supply in the City: District administration have planned to increase water supplying capacity of Hidkal Reservoir from 12 MGD to 18 MGD supported by another project of Rakaskop Reservoir from 6 MGD to 12 MGD. The City Municipal Corporation has planned 24 X 7 water supply scheme for the city.
- Belgaum Airport: The land acquisition of about 370 acres is underway as per the Government Order in October 2006, for the airport expansion. The Airport Authority of India has been given the charge of upgrading the runway, terminal and the taxi apron way.
- Upgradation of Infrastructure Facilities at Foundry: The Government of India (GoI) has very recently approved the Upgradation of Infrastructure facilities at Foundry Cluster, Belgaum under Industrial Infrastructure Upgradation Scheme (IIUS) at a tentative cost of INR 247.80 million. The following works will be covered under this Upgradation scheme.
 - Upgradation of infrastructure covering roads, water, water tank, sump tank, pump house
 - Communications covering telephone, internet, fax, Xerox, computers, LCD, Genset etc.
 - CETP - building reclamation plant, green sand, chemical bonded (5 tons /hr.), material handling equipment, common quality testing laboratory, building, furniture, equipments
- Redevelopment of Tourism Properties under PPP Scheme: The Department of Tourism / Karnataka State Tourism Development Corporation has mandated i-deck to provide assistance in selecting a private developer for renovation, operations and management of tourism properties at various locations in Karnataka. The overall project cost is pegged at INR 90 million with a fixed amount of money allocated for all historical/tourist monuments in the City of Belgaum. Apart from this, about INR 1.0 million was allocated in 2005-2007 from the budget to form new gardens & Lake Front Development of the Kotekere Tank.

- Proposals for Special Economic Zones (SEZs) and Industrial Parks:
There are many proposals for SEZs development and for setting up specific product industrial parks in and around the Belgaum city. About 169.8 acres of land identified adjacent the VTU college in south Belgaum for an IT Park. Close by 69.8 acres land has been earmarked for a proposed Apparel park. Apart from this a proposal has been tabled for two more SEZs for engineering and sugar industries. About 300 acres identified in Hukkeri Taluk for this purpose. Engineering services major Quest is collaborating with business partners to establish a 300-acre SEZ in Belgaum to build an ecosystem of aerospace supply chain. The SEZ, which has been granted in-principle clearance by the Board of Approvals, will be housing suppliers in a single area and carry out precision machining. It is expected to employ about 10,000 people. Quest's present facility in Bangalore, set up in collaboration with Canadian major Magellan, will also move into the SEZ as a 200,000 sq. ft. plant. Lately there have been repeated proposals to set up food processing, textile & floriculture parks in the north as industrial parks in collaboration with the KIADB.

- Major residential developments are taking place in the far north, east and the south. The northern as well as the southern areas are experiencing growth due to the commercial and institutional developments on the NH-4 (north) and NH-4A (Khanapur Road in the south). The eastern areas like Ramterth Nagar, Kanbargi, Mahantesh Nagar, Rukmini Nagar, Patil Nagar, Sree Nagar, Shivteertha Colony, Gandhi Nagar etc. have developed mainly in the last 3 years and constitute the most sought after residential areas of the city. This development can be attributed to their proximity to the CBD and the developing stretch of NH-4 in the north as well as the proximity to the SH-20 that leads to the airport.

5.6 MANGALORE

5.6.1 An Overview

Mangalore, originally called Mangalooru, is the fourth largest city and chief port city of Karnataka State. The city is located along the Malabar Coast on the backwaters of the Netravati and Gurupur Rivers and is the administrative headquarters of the Dakshina Kannada (South Canara) district. Mangalore is an administrative, commercial, educational and industrial center and is known for its beaches and temples. It has a long tradition of business & entrepreneurship and ranks second in the state after Bangalore in terms of growth and potential for development. The following map presents the location map for the city.

Map Showing the District Map of Dakshina Kannada and Its Location



Three National Highways (NH) pass through Mangalore connecting the city to the rest of the country. NH-17, which runs from Panvel, Maharashtra to Changanur Junction, near Edapally in Kerala, passes through Mangalore giving it excellent North-South connectivity. NH-48 runs eastward from Mangalore to the state capital, Bangalore. NH-13 runs northeast from Mangalore to Sholapur. A state highway (SH-88) connects Mangalore to the city of Mysore passing through the hill city of Madikeri.

5.6.2 Economic Base - Mangalore

The establishments of many industries particularly from 1950, existence of port & port related activities, bulk export of timber, coffee & cashew nuts, trade & commerce, entry of IT & ITES companies have made the city an important center of employment in Karnataka. Economic base of the city comprises of the

following five core sub-sectors:

- Agriculture;
- Port related Activities;
- Manufacturing Industries;
- Information Technology; and
- Trade & Commerce.

Mangalore is a multi-functional city with business (trade and commerce), skilled jobs (industries) and administration as the principal sources of employment. The tertiary or service sector has increased over the recent years with a significant proportion of new jobs across a whole range of activities. Of late, this sector has emerged as the single largest employer and will continue to grow as the dominant sector in the future considering the developmental initiatives planned in the city. The sector contributed to more than 98 percent (in absolute figures - 226,180) of the total city's workforce in 2001 due to the development of IT development, trade & commercial, financial & banking sectors, and industries, which are being identified as future growth engines.

Workers participation rate (42.6%) of the city is higher compared to some of the major cities in the state. The spending pattern indicates an annual expenditure between INR 48,000 to INR 75,000 for majority of the households (51%).

Mangalore is one of the first Tier II cities in Karnataka to attract investments in information technology (IT) sector. Major information technology and outsourcing companies have started locating their operations in Mangalore. IT major Infosys was one of the first to move in and establish a large presence. Several other major companies have their presence in Mangalore and more companies such as TCS, Wipro, KEL and Infosys are planning to expand their workforce in Mangalore.

5.6.3 Administrative Setup

Mangalore City Municipal Council was upgraded into Mangalore City Corporation (MCC) on 3rd July 1980 and has witnessed expansion of the administrative jurisdiction twice, firstly during the year 1996-97 by including Surathkal Town Municipal Council, Katipalla Notified Area, and Panambur, Baikampady Kulai & Hosabettu villages and secondly during April 2002 by including Bajal, Kannuru, Kudupu and Thiruvail Panchayats. Present

administrative jurisdiction of the MCC extends over an area of about 132.45 sq. km comprising 60 administrative wards.

Mangalore Urban Development Authority (MUDA) is the planning authority responsible for planning and regulating the development of the Mangalore urban. The administrative jurisdiction of MUDA comprises the MCC area and other surrounding revenue villages. Following table presents the fact sheet of Mangalore City.

Fact Sheet for Mangalore City

City	Mangalore
Administrative Status	District Headquarters for Dakshina Kannada (South Canara) District
Area	Mangalore Municipal Corporation (MCC): 132.45 sq. km
Population	539,387 (as per 2001 Census) 584,580 (Estimated Population - 2007)
City Administrator	City Municipal Corporation (MCC)
City Functions	Administrative Activities, Trade & Commerce, Agricultural Processing and Port-related Activities
Geographic Location	Latitude: 12° 52' North Longitude: 74° 49' East Altitude: 5 m above the Mean Sea Level Located at a distance of approximately 363 km from Bangalore and 673 km from Mumbai.
Connectivity and Linkages	The city is well connected by road, rail, air and sea. Three national highways pass through the city (NH-17, NH-48 & NH-13). A state highway (SH-88) connects Mangalore to the city of Mysore passing through the hill city of Madikeri. Mangalore is directly connected through broad gauge railway network to the major cities like Mumbai, Delhi and Goa via the Konkan Railway to Chennai, Calicut, Cochin and Trivandrum via the Southern Railway and to Bangalore,

	Mysore & Hassan via the Mangalore-Hassan Rail Line of South Western Railway. The city has daily direct flights to Bangalore, Mumbai, Goa, Calicut, Cochin and Trivandrum and a few international flights to the Middle East. Mangalore is the only major port in Karnataka, situated midway between the major ports of Marmagoa and Cochin.
Climate	General: Hot and humid climatic conditions. Summer : Maximum 37°C, Minimum 20°C Winter: Maximum 30°C , Minimum 17°C Rainfall : June to September: 400 centimeters
Languages	Regional language is Tulu, Kannada and Konkani. English & Hindi are widely understood
Nearest Airport and Approximate Distance	Bajpe - 20 km

5.6.4 Key Infrastructure And Development Initiatives

- Mangalore Special Economic Zone: The proposed Mangalore Special Economic Zone (MSEZ) is planned adjacent to the existing MRPL refinery complex on north & eastern sides in an area covering about 3,985 acres of land. ONGC-MRPL, the anchor promoter is already operating a refinery in the adjacent area with established infrastructure. The SEZ is proposed adjacent to an already established industrial belt. This SEZ is being developed under PPP format with 49% stake holding with MRPL & Karnataka Industrial Area Development Board (KIADB) and the rest 51% stake with private developers. Master Plan for this mega project is being prepared at present.
- IT Special Economic Zone: The KIADB has issued notifications for the acquisition of around 600 acres of land in the northern part of Mangalore for the purpose of setting up of IT-ITES SEZ. Also, Infosys and Wipro have plans of setting up software development campuses-lands purchased in Konaje covering an area of 692.08 acres.
- Export Promotion Industrial Park Zone: The State-level single window clearance committee has totally approved the investment proposals of eight

companies at the Export Promotion Industrial Park (EPIP) at Ganjimath covering an area of 201.92 acres with a total investment of INR 3.00 billion. This includes the establishment of both Information Technology & business process outsourcing (BPO) unit.

- Port Connectivity And Road Projects: Apart from above key infrastructure development initiatives, about 37.5 km stretch of road connecting New Mangalore Port to Suratkal on NH-17 and BC Road Junction on NH-48 is being upgraded to four-lane under the Port Connectivity Program of the National Highway Development Project (NHDP). As part of this project, the National Highways Authority of India (NHA) is constructing seven flyovers. Three flyovers are expected to be completed during the year 2008 while the others are being built at Surathkal, Kulur, Kuntikana and Nanthoor.
- Airport Up-Gradation: There is a proposal to upgrade the airport to international status with a new terminal building and approach road to facilitate handling larger passenger traffic volume.
- KUDCEMP: It is noteworthy that Mangalore is one of the 10 costal cities/towns taken up for infrastructure development, under the Karnataka Urban Development and Coastal Environmental Management Project (KUDCEMP). This project is being executed by the Karnataka Urban Infrastructure Development and Finance Corporation (KUIDFC) of Government of Karnataka with financial assistance from the Asian Development Bank.

The following map presents major city level infrastructure developments.



5.7 MYSORE

5.7.1 An Overview

Located 140 Kms from the state capital Bangalore-- Mysore is the erstwhile capital of Wodeyars, the rulers of Mysore state. Mysore city is at 770m above sea level and 140 kms from Bangalore. Situated in the southern part of the Deccan Plateau, Mysore District is an undulating tableland, covered in parts by granite outcrops and fringed by verdant forests. From ancient times, this district has played a significant role in the history of South India.



Mysore is the second biggest city in the state of Karnataka covering an area of 128 sq. kms. In order to improve air connectivity with the major cities of the country, upgradation and expansion of the existing airport is on the anvil. Mysore has inter-city and sub-urban public bus transportation, albeit not very robust. The system operates from the 'City Bus Stand' connecting to most major sections of the city. Traditional means of transport available in other Indian cities like auto-rickshaws and taxis are also available.

Mysore is an educational, commercial and administrative centre and also an important tourist and heritage centre. Also known as the City of Palaces, Mysore retains a quaint charm that never fails to enchant. It is a popular tourist destination, offering several attractions ranging from the royal splendour of Mysore City and its fabulous Dasara Festival to exquisite temples, pilgrimage centres and scenic spots. It is well connected to the adjoining States of Kerala (Wynad, Calicut) and Tamil Nadu (Ooty, Coimbatore) through roads.

Mysore is the railway junction for the district, and rail lines connect Mysore city to Bangalore to the northeast via Mandya, and to the rail junction at Hassan to the northwest, to Chamarajanagar via Nanjangud to the southeast. The city of Mysore has been rapidly growing and a spate of infrastructure activities need to be planned for the city's infrastructure to keep pace with the population growth and increasing commercialization. The City in its present form is congested as the road network is inadequate and mass transport infrastructure is not in place. The city boasts of having around 50 parks and three major lakes but the upkeep and maintenance is not satisfactory. Further, the city intends to

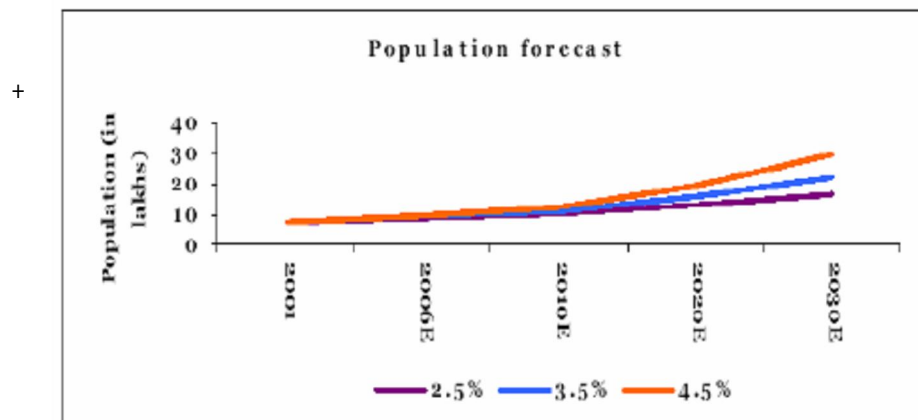
develop integrated townships/sub-urban spaces in the growth corridors of the city so that the growth of the city is not skewed.

Growth of Population in Mysore City

Year	Population (In lakhs)	Average Decadal Growth Rate
1901	0.68	-
1911	0.71	4 %
1921	0.84	18%
1931	1.07	27%
1941	1.5	40%
1951	2.44	63%
1961	2.54	4%
1971	3.56	40%
1981	4.79	35%
1991	6.53	36%
2001	7.86	20%

Source: Census of India

Population of Mysore has been increasing at a compounded annual rate of 2.5% in the last two decades, which is higher in comparison to the population growth for the State of Karnataka.



5.7.2 Economic Base – Mysore

Tourism centered on numerous attractions and the Dasara festival, contribute to the economy and fame of Mysore. The city is a host to an annual inflow of tourists to the tune of around 25 lakhs annually, around 95% of which are domestic, while the rest are international tourists.

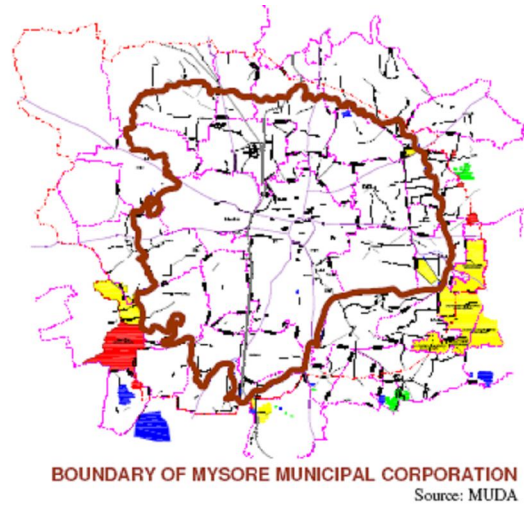
Other industries in Mysore include, manufacturing Tyres, Textiles, Electronic Systems and Information Technology. Mysore is also known for its Silks and Sandalwood.

The Government of Karnataka is promoting Mysore as an alternative destination for the Information Technology (IT) industry and developing it as a counter magnet city Bangalore. As a result, the city has become a new haven for the IT and ITES industry.



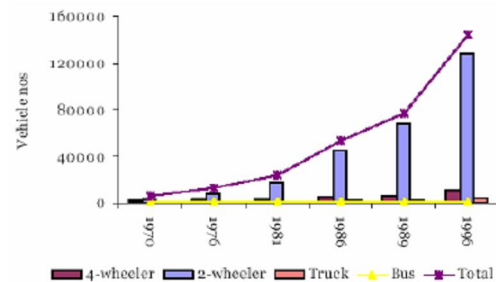
5.7.3 Administrative Setup

The Mysore City Corporation (MCC) and Mysore Urban Development Authority (MUDA) are two urban bodies in Mysore. The Government of Karnataka established the Urban Development Authorities for the planned development of major and important urban areas in the State.



5.7.4 Growth of Vehicular Traffic in Mysore

As the City grows with the increase in per capita income, the ownership of the vehicles has increased and the burden of traffic on roads of Mysore has been increasing. The number of motor vehicles has increased almost 25 times in the last decade while the road capacities in the older parts of the city has remained same.



VI. Project Financials

6.1 General

The preliminary financial analysis for a standardised MFOB has been carried out based on the assumptions arrived from preliminary market assessment carried out at the identified Cities.

The Financial Viability of the Project is assessed with respect to the key parameters such as Project IRR and Equity Internal Rate of Returns (IRR). The Equity IRR for the selected cities vary drastically as certain cities growth rates are much lower as compared to developed cities like Bangalore, Mangalore etc.

The viability analysis includes the identification of revenue and expenditure streams. Revenues will be from advertisement and commercial activities, while the expenditure would be primarily on account of Capital and O&M costs.

Caveat: The following set of assumptions has been adopted for the purpose of financial analysis and assessing the broad viability of the project. The assessment would vary for specific locations and packaging of the MFOBs.

6.2 Cost & O&M Assumptions

Following set of assumptions are considered for the Financial Assessment of the package that includes general assumptions, area assumptions and specifications.

6.2.1 General Assumptions

- Height of each FOB from the top surface of the road till the bottom of the skywalk (ground clearance) is 5.6 meters.
- Clear width of skywalk of each FOB is 4 meters.
- All escalators will run for 8 hrs a day with a 12 KWH capacity for 365 days annually
- All lifts of 5 KWH capacity will run for 8 hours a day for 365 days
- Gap between two consecutive halogen lamps of 200 kwh at the Advertisement hoardings is 2.45 m.
- 200 KWH halogen lamps on the advertisement hoardings will be lit for 6 hrs per day between 6 pm to 12 am for 10 months annually
- 100 KWH tube lamps inside the FOB will be lit for 6 hrs per day between 6 pm to 12 am round the year.

6.2.2 Preliminary Cost Estimation

The preliminary cost estimates are based on the preliminary market surveys carried out for the identified Cities. The landed project cost is estimated considering the cost involved in Construction, Project Development Fees, Interest during construction, Cost of Approvals & Sanctions and Pre-operative cost & contingencies etc. Following Tables shows the breakup of the Cost for a standard design of Mechanised FOB

Cost Assumptions

Cost	% of the Project Cost
Construction cost	
Skeleton FOB with Staircase	26%
Escalators	52%
Elevators (15-20 persons capacity)	9%
Elevators (4-6)	2%
Halogen lamps on both sides up & down	0.42%
Lighting within FOB	0.01%
Approvals & Sanctions	1%
Pre-operative Cost & Contingencies	4%
Project Development Cost	
Project Development Expenses	2%
Financing and Other Costs	
Insurance Cost	0.9%
Financing Cost	1.3%
Interest During Construction	2%
Total Cost	100%

<i>S.no</i>	<i>Particulars</i>	<i>Rupees in Lakhs</i>
1.	Construction Cost	205.04
a.	Unit cost (sq.m) of skeleton FOB (per Running Metre) with 4m width sky walk, height of 5.5m ground clearance and 14' roof height	2
b.	Cost of one outdoor escalator including erection	120
c.	Cost of one lift with 15-20 persons capacity	20
d.	Gap between two consecutive halogen lamps of 200w at the Adv. Hoardings is 2.45 m and unit cost	0.02
2.	Approvals & Sanctions	2.00
3.	Pre-operative Cost & Contingencies	10.25
4.	Project Development Costs	5
5.	Insurance Cost	2.05
6.	Financing Cost	2.99
7.	Interest During Construction	3.69
8.	Landed MFOB Cost	231.02

6.2.3 O&M Assumptions

<i>S No</i>	<i>Operation Related Assumptions</i>	<i>Unit</i>	<i>Figures in rupees/ Remarks</i>
1.	Escalator will run for 8 hrs a day with a 12 KWH capacity for 365 days annually	KWH	35040
2.	Lift of 6 KWH capacity will run for 8 hours a day for 365 days		17520

S No	Operation Related Assumptions	Unit	Figures in rupees/ Remarks
3.	200 KWH halogen lamps on the advertisement hoardings will be lit for 6 hrs per day between 6 pm to 12 am for 10 months annually		360
4.	100 KWH tube lamps inside the FOB will be lit for 6 hrs per day between 6 pm to 12am round the year		219
5.	Costs towards salary of 2 security guards round the clock per month	Rupees	15,000
6.	Unit cost of power	Rupees	7.00
7.	Inflation rate for Power Costs of lifts, escalators, Halogen lamps at Advertisement Hoardings and lamps inside FOB.	%	5% every 4 years
8.	Annual Maintenance Charge (AMC) of Escalators and lifts.	%	3% of the capital cost with an escalation of 5% in every 2 years
9.	The Inflation rate for Manpower cost.	%	5% in every year
10.	Administrative Cost	Rupees in Lakhs	1.5 lakhs with an escalation of 5.5% every year
11.	Miscellaneous Cost	%	10% of total cost

6.3 Revenue Streams

The MFOBs are proposed to be structured on Development and Management Rights Model with advertisement rights and commercial rental rights. Revenue from advertisements shall be major revenue stream for the operator to recover the investment.

The advertisement rates for selected few cities in Karnataka were studied to understand and assess their viability for a mechanized FOB. The table below states the rates per square feet of advertisement at some of the high traffic congested roads in each city. These roads have also been identified as critical locations that are in urgent need for pedestrian facilities such as the FOB's.

Advertising rates at various cities in Karnataka

<i>City</i>	<i>Location</i>	<i>Size (In Sq Ft)</i>	<i>Rate Per Month</i>	<i>Rate Per Sq Ft</i>
BANGALORE	Hosur road	600	150,000	200
	Bannergatta	600	120,000	180
	City railway station	600	108,000	150
	Sharjapur road	600	120,000	180
MANGALORE	Kankanady circle	800	17,600	22
	Hampankatta road	600	13,200	22
	Bunts hostel circle	600	13,200	22
	Falnir road	600	13,200	22
	City hospital road	600	13,200	22
	Kadri park	840	18,480	22
HUBLI	Lamington road	750	15,000	20
	Station road	400	8,000	20
	Chennama circle	400	8,000	20
	Gokul road	600	12,000	20
DHARWAD	Cosmos club road	400	6,800	17
	Corporation road	400	6,000	15
	Jubilee circle	400	6,000	15

BELGAUM	College road	600	12,000	20
	Central bus station road	600	12,000	20
	Kohlapur circle	600	12,000	20
	Station road	600	12,000	20
MYSORE	Suburb bus station road	300	6,600	22
	Ontikoppal	200	5,000	25
	Dhanwanthri road	200	4,400	22
	Railway station road	200	5,600	28

The few other source of revenue that could contribute to the viability of a mechanized FOB for a shorter lease period would be installation of the following facilities:

a. ATM Vestibule

ATM vestibules can be incorporated into the FOBs as a commercial component. These can be open or enclosed types, depending on the location and security for such facility.

b. Kiosks

Kiosks can be a valuable form of commercial component for the FOB. These can range from small newspaper/ magazine stalls, travel information counters, ticket booking stalls, to medical shops and refreshment stalls.

6.4 Key Financial Indicators

A Period of 20 Years is found suitable to expect good returns for a continued period from a Mechanised Foot Over Bridge. A block financial Assessment for development of MFOB on PPP format has been carried as in Annexure-I.

Following table shows the financial indicators for 20 years of authorization period, 50:50 debt-equity structure.

Key Financial Indicators

Sr. No.	City	Indicators	
1.	Mangalore	Post-tax Project IRR	22.30 %
		Equity IRR	31.9 %
		DSCR (Avg.)	2.55
2.	Hubli	Post-tax Project IRR	20.52 %
		Equity IRR	29.3 %
		DSCR (Avg.)	2.50
3.	Dharwad	Post-tax Project IRR	17.66 %
		Equity IRR	26.66%
		DSCR (Avg.)	2.24
4.	Belgaum	Post-tax Project IRR	20.52 %
		Equity IRR	29.3 %
		DSCR (Avg.)	2.50
5.	Mysore	Post-tax Project IRR	22.30 %
		Equity IRR	31.9 %
		DSCR (Avg.)	2.55

The equity IRR and the Project IRR represent the projects financial viability on PPP format. The derived values are computed taking into considerations the taxes levied on advertisements.

6.5 Commercial Viability as Per Location

The implementation of high investment infrastructure such as the Mechanised FOB could only be viable if the development and city infrastructure around the proposed area supports to the returns on investment. Advertisements on the FOB would be the prime source of revenue to the operator. In such case the viability is directly proportional to the advertisement rates prevailing at the proposed locations. The selected cities for this pre feasibility could be ranked on the basis of the print advertisement market established at the locations. City specific IRR have been derived considering the advertisement rates at various locations in the selected cities.

The table below shows the ranking of the cities as per commercial viability of constructing & operating a Mechanised FOB:

Ranking of cities based on commercial viability

<i>Ranking</i>	<i>City</i>
1.	Bangalore
2.	Mangalore
3.	Mysore
4.	Belgaum
5.	Hubli
6.	Dharwad

VII. Operating Framework

7.1 Implementation Structure

The locations identified for development of MFOBs in individual cities would need to be assessed for their technical & financial viability. In the proposed PPP structure for implementation, the roles to be performed by the respective parties i.e. the ULBs and Selected Developers have been identified as below:

7.1.1 Role of ULBs:

The role of the ULBs would include:

- a. Identification of locations
- b. Co-ordination with and seeking requisite clearances
- c. Standardization of MFOB designs and performance standards
- d. Providing advertisement rights to developers

7.1.2 Role of Developer:

The role of the Developer would include but not limited to :

- a. Design, finance, construct, operate, maintain and manage the facilities including supporting ancillary infrastructure
- b. Meet the requirements laid down by the Competent Authority

7.2 Packaging of MFOBs

While the objective of the ULBs would to develop MFOBs at all identified locations in the cities, the developer's interest could tend to be restricted and limited to only the prime advertisement locations for the City. To mitigate this risk where the developers may not wish to implement the MFOBs at locations with relatively lower advertising demand, it is proposed to package a minimum of 2-3 locations together, where the prime locations are packaged with locations with relatively lower demand. When packaged, the viability of the locations with a lower advertising demand would also seem commercially attractive to the Developers.

7.3 Components

Foot over Bridges have been implemented in many cities of India to provide safety while using highways and busy roads. The pedestrian facilities are required to provide maximum utility in terms of use and efficiency of the

infrastructure. To facilitate the same, the concept of Mechanised Foot Over Bridges has been implemented in few cities of India and has seen success in terms of providing comfort and safety at major congested road crossings. The following parameters could be considered while designing the project and operational standards.

7.3.1 Development Guidelines

- a. The eco-friendly practices in the designing and operation of the MFOBs could be encouraged. The roof/ shelter of the skywalks and service core can be explored for renewable energy generation (like solar panels) which can be utilised for part operation of MFOBs and allied facilities. This kind of initiatives can make the facility self sustainable and increase the returns of the developers.
- b. To ensure that the FOBs stand as modern public facility, use of modern/ materials, contemporary building techniques shall be encouraged, thus providing functional, aesthetic and visual comfort to the users.
- c. The Central Median Structure that supports the skywalk could be of uni-pole type (single or a pair of cylindrical pillars) that is aesthetically pleasing and occupy minimum space thereby keeping the ground free for circulation

7.3.2 Technical Specifications & Design Standards

In addition to the Development guidelines, the Specifications and Standards for the MFOBs as well as advertisement panels could be pre-designed and standardized. This would ensure that while the designs confirm to safety standards by complying to the Indian Standards for design and safety, the MFOBs are also aesthetically soothing and attractive structures.

7.3.3 Civil and Structural Specifications

The MFOB structure shall be essentially required to be designed in accordance with the latest Indian Standard Codes and for appropriate seismic load, all dead and live loads, wind pressures etc. in all cases, normal strengthening to resist distress during earthquakes. The Steel structures shall also be required to be designed in accordance with the provisions of IS 800:1984. Structural steel shall conform to IS 2062:2006. Tubular sections would conform to IS- 4923. Structural joints shall conform to IS 4000:1992.

7.3.4 Other Design Specifications and Standards

The other important design parameter that would essentially need to be considered while designing the MFOB would include:

- All design standards and specifications apart from serving the needs of the general public/ pedestrians would require to confirm to the requirements of the differently abled persons. Specific design specifications are as follows. For more details, please refer to the model architectural and structural drawings annexed as 'Design Manual' at the end of this section.
- The width of the staircase shall be minimum 1.80 m. The tread and rise of the staircase shall be 300 mm and 150 mm respectively. The treads of the steps shall be of anti-skid material.
- At the entrance of stair case or at prominent visible location, emergency telephone numbers like Ambulance, nearby Hospital, nearby Police Station, Traffic Police and other help line numbers to be written
- Escalators, suitable to external weather conditions, certified by ISO 9001 having provision for manual operations for up and down movement and inclusive of guard rails, handicap chair attachment etc shall be provided.
- The width of the skywalk to be 4.0 m. and its clear height between road surface and bottom of the Skywalk to be 5.60 m.
- The skywalk shall be covered with a roof of semitransparent polycarbonate sheets (minimum 10mm thick) with appropriate drainage system.
- The minimum height of the roof from the floor of skywalk shall not be less than 3.5 m.
- The floor of the skywalk shall be continuous without any obstructions and shall be of anti-skid material.
- The skywalk shall include safety features such as guardrails/ handrails along the length of skywalk for safety of the users.
- The skyways shall be maintained free of obstructions, and the developer shall not put up any fixtures that may obstruct the passage on the skywalk and/ or shall not keep any wares, furniture or other articles in the corridor.
- The provision for Outdoor Advertisement Panels shall be 2 (two) in numbers on both side of the skywalk and shall be front-lit or back-lit type.

- The advertisement panels mounted on the skywalk for view from the roads shall have height not more than 3.0 m (10 ft.) and length as per the length of the skywalk.
- The advertisement panels shall be mounted minimum 1.8 m. (6 ft.) above the floor of skywalk from safety point of view providing clear visibility of pedestrian movement from the ground level.
- The free standing advertisement inside the skywalk can be provided with proper permission of the GHMC.
- The provision for vocal media advertisements could be provided
- The Developer must seek prior permission on location of the kiosks, ATM vestibules and/ or free standing advertisements. If any services like cold drink / hot beverages dispensers / PCO Booth or ATM counter is provided within FOB premises
- Proper signages in atleast 3 languages to be provided on the MFOB
- The planning, design and execution of electrical installation, installation of lifts/ escalators in FOBs shall be carried out in accordance with Part VIII-Building Services (Section 2-Electric Installations, Section 5-Installation of Elevators and Escalators, of National Building Code (NBC) of India prepared by BIS and as prevalent at the time of execution of the works, as the case may be.
- The planning, design, construction, and installation of drainage system in FOBs shall be in accordance with the Part IX (Section 1-Plumbing Services, Section 2-Plumbing and Sanitation as the case may be) of NBC of India prepared by BIS and as prevalent at the time of execution of the work.
- Solid Waste Collection and Disposal System shall be in place. Developer shall provided sufficient no. of dustbins
- The lift /escalator should be provided with adequate power backup in case of emergencies.
- The Developer shall provide the required fire fighting equipment and facilities including fire hydrants, fire proof doors etc. conforming to the relevant standards and the applicable rules and regulations. For Fire Protection and Fire Safety requirements the Developer is required to

follow the guidelines as provided in National Building Code (NBC) of India published by the Bureau of Indian Standards shall be followed.

- The materials used for the FOB, flooring, roofing etc, should be fire resistant.

7.3.5 Maintenance & Performance Standards

The following maintenance and performance standards cover the minimum requirements for operation that could be stipulated in the maintenance and performance standards for the developer.

- Perform maintenance on a routine and periodic basis.
- Provide functional facilities that (a) meet the requirements of FOBs; (b) ensure the safety of the users; and (c) maintain a clean and hygienic environment at FOB locations.
- Identify potential problems early within the context of the planned maintenance system so that corrective action may be planned and completed in a timely manner.
- Establish a maintenance list for planned operation and maintenance. Follow an orderly program so that maximum operational efficiency is attained.
- Maintain regular and systematic records of all maintenance and operations activity at the Facilities
- The Developer shall perform routine and periodic maintenance activities for the project infrastructure viz, civil, mechanical and electrical works and equipment, services, facilities.
- Maintenance of all the electrical-mechanical equipments, machineries shall be as per 'Original Equipment Manufacturers' (OEM) standards.
- Undertake planned and reactive maintenance of equipment to ensure that equipment is safe, accurate and working to optimum performance and to achieve maximum availability and continuity of services by maintaining standards set by equipment manufacturer

7.3.6 Maintenance Performance Standards

In order to maintain the quality and operational standards of high quality, the periodic maintenance/ renewal activities are proposed for the Project

Sr. No	Periodic Renewal Activities	Time Limit for renewal
1	Repainting of FOB structure, signage delineators, markings etc.	Minimum once in three years

Sr. No	Periodic Renewal Activities	Time Limit for renewal
4	Resurfacing of skywalk flooring material and trades of staircase	Routine repairs every year. In case the flooring material is of rigid type, no periodic renewal would be required except cleaning & filling of joints
5	Mechanical Equipment	Minimum once in six months, as per manufacturer's installation, operation and maintenance instruction manual
6	Electrical Equipment	Minimum once in a year, as per manufacturer's installation, operation and maintenance instruction manual
7	Fire Fighting System	As per manufacturer's installation, operation and maintenance instruction manual
8	Lighting	Periodic check up and replacement as and when needed
9	Cleaning of FOB and garbage disposal	Daily

7.3.7 Performance Standards for Operation

In order to maintain quality standards in the operation of the Project, the following performance standards for operation shall be required to be adhered

Sr. No.	Parameters	Performance Indicators
1.	Foot Over Bridge with staircases	To remain operational 24 hours a day throughout the year
2.	Escalators	To remain operational minimum 12 hours a day throughout the year (on staggered or continuous basis) depending upon location and peak pedestrian demand
3.	Elevators	To remain operational minimum 12 hours a day throughout the year (on staggered or continuous basis) depending upon location and peak pedestrian demand
4.	Electricity Supply for FOBs, kiosks/	To remain operational 24 hours a day throughout the year

	Commercial Space, Advertisement	
5.	Standby Diesel Generator Sets or Solar/ Renewable Energy	To supply power to the Project facilities must be available 24 hours a day, throughout the year in case of disruption or breakdown in power supply
6.	Security services	To remain Operational 24 hour a day throughout the year

7.4 Standardisation of Designs

The designs of the MFOBs are proposed to be standardized to ensure that the same are uniformly implemented across the city by the multiple developers. The standardisation of the designs would also ensure that the MFOBs are aesthetically soothing and also comply to the design specifications

A typical design of an MFOB for a road of width 30m has been prepared as in Annexure-IV to this pre-feasibility report. The preliminary viability assessment for the MFOBs has also been carried out based on the costs arrived for the typical design.

7.5 Standardised FOB Structure

7.5.1 Project Components

a. Components of Foot Over Bridge (Essential Facilities)

The FOB structure would comprise of following components:

- Service core: one staircase unit, one escalator and one elevator on both sides
- Skywalk of 4m clear width at a clear height of 5.6m from the finished surface level (f.s.l.) of the road (ground clearance)

b. Public Utilities (Essential Facilities)

- Setting up public utilities such as dustbins at the FOB facility

c. Commercial Components

- Advertisement panels for external display on skywalk and elevator shafts

7.5.2 Area Statement

Following table shows the broad area statement for different activities/ project components in the proposed FOB project. This area statement is based on the site study.

Staircase Width (m)	Staircase Area on ground (Sq. m.)	Width of Skywalk (m)	Length of Skywalk (m)	Clear height (m)	Minimum Capacity of Elevator
1.80	23 - 25	4 - 5	26	5.5 - 6	5-6

7.5.3 General Specifications

S No	Operation Related Specifications	Figures/ Remarks
1.	Escalator will run for 8 hrs a day with a 12 KWH capacity for 365 days annually	35040 KWH
2.	Lift of 6 KWH capacity will run for 8 hours a day for 365 days	17520 KWH
3.	200 KWH halogen lamps on the advertisement hoardings will be lit for 6 hrs per day between 6 pm to 12 am for 10 months annually	360 KWH
4.	100 KWH tube lamps inside the FOB will be lit for 6 hrs per day between 6 pm to 12am round the year	219
7.	Inflation rate for Power Costs of lifts, escalators, Halogen lamps at Advertisement Hoardings and lamps inside FOB.	5% every 4 years
8.	Annual Maintenance Charge (AMC) of Escalators and lifts.	3% of the capital cost with an escalation of 5% in every 2 years

VIII. Keys to Success

8.1 Key Stakeholders

The key stakeholders identified for the development of Mechanised Foot Over Bridges in developing Cities of Karnataka are:

- **Project Sponsor** - Concerned Municipal Authority or Owner of the Road
- **Nodal Department** - Urban Development Department / Directorate of Municipal Administration
- **Facilitating Department** - Infrastructure Development Department
- City Town Planning Department
- Traffic Police Department
- State Electricity Board
- National Highway Authority
- Other agency as deemed necessary by GHMC

For the successful implementation of the projects, the Infrastructure Development Department alongwith the Project Advisors and the Urban Development Department would require to convene a joint meeting of the heads of the ULBs where the project concept and structure is discussed and taken up for implementation.

The project sponsor alongwith the Project Advisors will be required to take the lead in co-ordinating with the individual agencies involved for identification of locations and for seeking the requisite clearances

8.2 Essential issues to be addressed

The following have been identified to be key issues for the success in developing of a MFOB and effective utilization of the same

- Barricading of median to prevent crossing at level & for efficient use of FOBs
- Issues like road widening after FOB is erected, visibility constraints of advt. due to trees to be adequately addressed in Agreement
- Spatial, material specifications and performance standards viz. speed, automisation, load bearing capacity of sky walk to be specified
- Joint inspections of locations and reviews with key stakeholders

8.3 Role of Project Sponsor

The ULB shall be responsible to give right to use land free of encumbrance to the Developer for developing the Project components. The land required for creating the Project Facilities would be required to be given on Development and Management Rights to the Developer over the Authorization Period in terms of the Authorization Agreement supported by Development and Management Agreement (DMA).

The ULB will also require to facilitate availability of infrastructural support/ services and ensure effective coordination between all government departments to provide timely approval and clearances. Government support/ facilitation would be required in the following:

- Ensuring availability of requisite infrastructural support/ services, viz. power supply, improving existing road, providing well defined footpaths of adequate width with good quality pavement and road medians at project locations, diverting telephone lines, sewage and drainage network near FOB landings/ foundations etc.
- Providing all clearances and approvals for execution of FOBs, installing supportive facilities and other commercial components for development and operation.

8.4 Clearances and Sanctions

The following clearances and sanctions for the proposed project from various agencies would be required

- Concerned Municipal Authority or Owner of the Road
- Public Work Department (PWD)
- Traffic Police Department
- State Electricity Board
- Water Supply & Sewerage Board
- Urban Development Authority
- National Highways Department, if necessary
- Other agency as deemed necessary

8.5 Risk Allocation and Mitigation

Appropriate risk mitigation structures would have to be evolved for the Project. Various risks associated with the Project and broad mitigation structure is explained below:



8.5.1 Design and Development Risk:

This can arise due to faulty specifications. This risk is being looked at being mitigated by the designs being finalized and standardized by the ULBs based on the city's profile.

8.5.2 Construction Risk:

This can lead to delays in completion. Effective clauses in the Authorisation Agreement and ensuring timely clearances and handing over of sites are some ways of mitigating this risk.

8.5.3 Demand Risk:

These risks arise from the project if there is no established demand for the Project. However in this case, a Pre-feasibility has been carried out to assess the viability of the project based on the demand for the revenue generating components for the project.

8.5.4 Commercial Risk/ Revenue Risk:

These risks arise from existing and future competition, effectiveness in utilizing space and management of facilities. With the involvement of Private Sector in marketing, O&M and management and attractive incentives structures linked with Project success, risk would be transferred to the Developer.

8.5.5 Political Risk:

These can be mitigated by effective legal documentation and insurance.

8.5.6 Environmental Risk:

Considering the size of the project and the design parameters essentially being considered the project to be environment friendly to the extent possible, this risk is not envisaged.

IX. Way Ahead

9.1 Proposal

KIPDC proposes to take up the Project Development for development of mechanized Foot Over Bridges (MFOBs) on PPP format including identification of locations in close co-ordination with IDD and the respective City administrations.

KIPDC proposes to provide advisory services for the implementation of MFOBs in the cities identified as an innovative urban infrastructure development program of the Government of Karnataka.

9.2 Project development approach by KIPDC

Project development comprises of end-to-end responsibility commencing from project conceptualisation, identification of locations for setting up of mechanized pedestrian foot over-bridges alongwith stakeholders (ULB, Traffic Police, Town Planning Dept, PWD, etc), technical and financial viability assessment, project packaging, risk analysis and legal review, concession agreements, assisting the ULB till the identification and selection of the most suitable private sector developer for the FOBs.

KIPDC shall undertake the project structuring and bid process management for selecting the most suitable developer to finance, design, construct, operate and maintain the subject project for around 15-20 years and with a view to facilitating PPP format. Bid process management shall be taken up in a speedy, competitive and transparent manner.

Location wise strategy would be developed including bunching of financially viable and non- viable project locations in order to maximize gains for the ULB. The ULB shall provide the selected private sector developer with development rights and permissible advertisement rights to recover its investments. Subsequent to the completion of the concession period, the asset would be returned back to the ULB by the developer.

Another essential requirement of successful project development would be to create awareness amongst likely developers through proactive marketing strategy. Project development cycle is expected to be around 2-3 months.

9.2.1 Scope of Project Development

In order to successfully implement the project, certain essential requirements as listed hereunder are enumerated:

- a. **Location Identification:** Identification of suitable project locations in coordination with ULB, Traffic Police, Town Planning Department, PWD, NHAI or any other agency as deemed necessary by the ULB. The basis for location of a pedestrian FOB shall be the pedestrian intensity, hazard index, measured by street/road surveys of the pedestrian and vehicular volumes at a given junction, road widening plans and availability of land on either side of the road for erection of the FOB. Project location identification also includes proximity of related synergies that may be factored while project development and structuring.
- b. **Project Development & Benchmarking Bid Values:** KIPDC would provide its professional expertise to undertake project development including project feasibility and structuring exercise in order to develop the most suitable PPP model and exploring the viability options. About 3-4 MFOBs would be packaged together as a single project with a combination of high & low remunerative locations based on the viability. Based on the viability of the proposed package, KIPDC would arrive at the benchmarking of Bid Values for each of the packages for optimum returns to the ULBs.
- c. **Procurement of Developer:** Undertaking in a speedy manner, competitive and transparent bid process management in order to select the most suitable private sector partner for this project. Private Sector Developers for the packages shall be selected through transparent bidding based on highest premium to ULB. KIPDC shall draft the concession agreement to be entered into by the ULB with the Private Sector Developer and facilitate in signing of the same

9.3 Implementation Plan

KIPDC proposes to take up the Project Development for the development of MFOBs in Cities of Karnataka in the following Phases:

9.3.1 Phase-I

In the Phase-I, it is proposed to identify 5 critical locations each in the top 5 cities of Karnataka and take up the project development and procurement process for selection of private sector developer for the same.

9.3.2 Phase-II

In the Phase-II, it is proposed to take up the project development for the following:

- Next set of locations in the top 5 cities of Karnataka
- MFOB's in other cities of Karnataka

9.4 Role Of Infrastructure Development Department

- Approval of Pre-feasibility Study carried out and recommendations to the Urban Development Department, Directorate of Municipal Administration and the ULB's for implementation of the MFOB's with KIPDC as project development advisor.
- Take up the implementation of the MFOB's in the Cities identified as an urban infrastructure development Program
- Act as facilitating arm to the Urban Development Department, Directorate of Municipal Administration and the ULB's.
- Convene joint meetings of the stakeholders for facilitating the ULBs in taking up the implementation, setting development time frames.
- Assist the ULBs in meetings with other departments, viz: PWD, National Highways, Traffic Police, etc

9.5 Role Of Urban Development Department & Directorate of Municipal Administration

- Take up the implementation of the MFOB's in the Cities identified as an urban infrastructure development Program with the assistance of IDD and KIPDC
- Issue necessary directives to the ULBs for taking up of the program for their respective cities with KIPDC as project development advisor
- Set project implementation timeframes and hold joint meetings of the ULBs for review of progress
- Seek the necessary expertise from IDD and KIPDC for successful implementation of the program

9.6 Role Of Urban Local Bodies

- Mandate the Project Development for development of MFOB's in the City on PPP format to KIPDC
- Take up the implementation of the MFOB's with the assistance of IDD and KIPDC

- Identify specific locations within the city for implementation of the MFOBs
- Seek necessary clearances from other stakeholders

X. Annexure-I

SUCCESS STORY - MODERN FOOT OVER BRIDGES, HYDERABAD

Introduction

Greater Hyderabad Municipal Corporation (GHMC) has been in the forefront of implementation of reforms across sectors. GHMC envisaged creation of state-of-the-art standardized infrastructure and public welfare facilities in GHMC area, and has prioritised the development of Foot Over Bridges (FOBs) as a part of overall traffic & transportation planning measures. GHMC proposed to involve private sector for the investments and effective management of the facilities. Considering the various technological options available, the need for public facility, viability of the proposal due to expected revenue sources, the FOBs were proposed to be developed on Public Private Partnership (PPP) format in Hyderabad city.

It has been observed that 50% fatalities in Hyderabad were pedestrian accidents. One minute waiting at a junction meant an annual loss of 3.80 lakh man-days. Accidental costs, Rehabilitation etc. would be separate social costs. Prolonged waiting during peak hours contributed to increased intake of pollution load by at least five times, thus, being detrimental to health

Supplementary to this, it was observed that subways are at least two times costlier to construct, time taken for construction is more than one year compared to only two to six months for elevated foot bridges. Also, the subways are being utilized to maximum 40-50% occupancy and limited to the hours of daylight. Therefore, it became essential to provide suitable pedestrians crossover facilities to enhance smooth flow of traffic and reduce the immense risk to the pedestrian life. Thus, GHMC has decided to take up project development of FOBs on priority basis in an integrated manner and on PPP basis, where a Private Developer would be required to bring in the investments and technological expertise for construction, operation & management.

GHMC in association with IL&FS IDC undertook joint inspections/ reconnaissance surveys and joint meetings along with Traffic & Transportation (T&T) and Planning departments of GHMC, Hyderabad Metro Rail (HMR), Traffic Police Department, HMWSSB, Roads and Buildings, etc. the survey is aimed at preliminary identification of proposed FOB locations in various parts of the city. The team identified about 50 key locations from pedestrian safety point.

Project Implementation Approach

A preliminary assessment of the proposed FOB locations was undertaken and it is decided to prioritize the program for phased implementation. The purpose of phasing was to shortlist FOBs based on the technical and spatial feasibility. Based on field observations, 18 FOBs that can be taken up immediately were categorized as Phase I. FOB locations were phased and prioritized based on the following criteria:

- FOB locations not falling on Mass Rapid Transport System (MRTS) line
- Ease of implementation
- Identified risks – technical, legal, political, etc.
- Proposed Road Development Plans (RDPs) of Town Planning Department of GHMC

From the phase I list of FOBs, Nine locations as presented in the table below were initially undertaken under '*Second List of Phase I*' for detailed project assessment and feasibility based on the following criteria:

- Proposed Road Development Plans (RDPs) of Town Planning Dept., GHMC
- Number of accidents at the given locations due to collision of high speed motorized fleet with the pedestrians crossing the road
- Traffic congestions at a given point/ junction on the road corridors.
- Time taken for pedestrian crossing the road is more than 2 minutes
- High-speed road corridors
- Nearness to bus shelters and the road junctions
- Intensity of commercial activities like CBDs, markets, shopping areas etc.

- Locations of institutional areas like schools, colleges, hospitals etc.
- Location of public places like theatres, exhibition grounds, parks, play areas etc.

Project Positioning and Packaging

The proposed FOBs were envisaged in a manner so as to maximise its market value and meeting the objectives of the GHMC. GHMC envisaged the proposed FOBs to provide the state-of-the-art facilities that provide eased access to all the pedestrians including the physically challenged persons. These FOBs would be equipped with modern technological elements like escalator-elevator systems and iconic/ sculptural form adorned with modern materials. Considering the nature of project an architectural prototype (standardized designs) would be provided by the authority or alternately, the developer should follow the standards and specifications developed by the authority while designing the FOB. To make the initiative commercially viable and financially sustainable, GHMC intended to explore advertisement possibilities having advanced advertising systems and commercial space development as may be required, besides meeting the objective. These FOBs were essential elements in the streetscape of Hyderabad, providing safety and comfort to the pedestrians and an image to the place.

Since the advertisement rate varies from location to location, the revenue may be different for different locations. So the clubbing of FOBs would make the proposition viable. Considering the need for FOBs at its identified locations, limited revenue sources from FOBs, nature of business of advertisement industry and the similar Operation & Maintenance (O&M) system, the FOBs 'Second List of Phase I' was grouped into three different packages for bidding purpose to make the projects more viable and attractive to investors/ developers, as mentioned below:

Sr. No.	FOB Locations	Package
1.	NMDC, Masabtank	Package A
2.	Suchitra Center, Medchal Road	
3.	ECIL Bus stop	
4.	Kondapur Cross Roads	Package B

Sr. No.	FOB Locations	Package
5.	JNTU, Kukatpally	Package C
6.	Nagole X Roads	
7.	Road No. 12, Banjara Hills	
8.	Peoples Plaza, Necklace Road	
9.	Neredmet X Roads	

Project Implementation

The Developer was selected through a competitive bidding process and entered into an Authorization (Concession) Agreement with GHMC to design, develop, finance, build, operate, manage and maintain the Project Facilities over the pre-agreed Authorization period and Transfer the project facility to the GHMC or its designated agency at the end of the Authorization period.

The proposed projects (FOBs) were structured on Development and Management Rights Model with advertisement rights and commercial rental rights. Revenue from advertisements shall be major revenue stream for private developer to recover the investment. The project could be implemented through an SPV in case of a consortium of firms being the Preferred Bidder. GHMC is the authority to provide 'right to use' the land for the development of modern FOBs and rental rights of advertisement and commercial spaces for the pre-agreed authorization period.

The proposed projects were given for development and management for an authorisation period of 20 years.

Annexure-II

CONTEMPORARY FOOT OVER BRIDGES IN INDIA

ITO Square, Delhi

The following pictures show the modern FOB at ITO Square, New Delhi. The FOB consists of escalators on both ends and is semi- enclosed with fibre glass/ polycarbonate sheets.

The contract is being executed by Schneider Electric which is a world leader in electric and automation management. The company has installed the escalators at ITO, Inter-State Bus Terminus at Kashmere Gate, Majnu ka Tila, Moti Bagh, Sri Venkateswara College and Maharani Bagh.



Gariahat, Kolkata

The construction was planned following a build-own-operate agreement between the KMC and Selvel. The priority for the infrastructure was realized after numerous fatal accidents near Bijon Setu, the guardians of students of several schools in the area (including South Point and Patha Bhavan) approached the civic authorities for a footbridge. According to the agreement, the advertising firm will operate the bridge for 30 years.

Saidapet court, Anna salai, Chennai

The Chennai Corporation will soon build a foot-over-bridge (FOB) with lifts on two sides in front of the Saidapet court complex on Anna Salai. The civic body has already called for tenders for the FOB and lifts. The contractor selected to take up the construction of the FOB will be expected to complete the work in three months.

The corporation's decision to construct a FOB in front of the Saidapet court complex has evoked a welcome response from many road-users. Pedestrians have been finding it difficult to cross the road, particularly after it was made a one-way stretch.

In Chennai, about 600 pedestrians were injured and around 130 pedestrians lost their lives in road accidents from January 2009 to June 2009. During the period from January to December 2008, the number of victims was 1,373 and 231 respectively. The traffic police have requested the Corporation to construct FOBs at 10 to 12 places in the city.

Annexure-III

Typical Viability Assessment

Assumption & Key Financial Indicators

Financial Year Ending 31st March -----	
->	
Year Counter	

Timing Assumptions

Construction Period	6 Months	
Operation Period	20.0 years	
Concession Start Date	1-Aug-09	
Concession End Date	28-Feb-30	
Signing of Concession Agreement	1-Aug-09	2009
Construction Start Date	1-Aug-09	2009
Construction End Date	28-Feb-10	2010
Operation Start Date	1-Mar-10	2010
Operation End Date	28-Feb-30	2030

No. of months in a Year	12 Months
-------------------------	------------------

Months of Construction	6 Months
Months of Operation	

Proportion of Work Completed	1.00
------------------------------	------

Financing Assumptions

	Debt	Equity
Debt:Equity Ratio	50.0%	50.0%
Total Debt	115.51 Lakhs	
Drawdown	1	
Post Drawdown Moratorium	1	
Repayment Instalment	7	
Total debt Period	9	
Rate of Interest	13.00%	



Development of Modern FOBs

Profit & Loss Account									
Financial Year Ending 31st March ----->			2009	2010	2011	2012	2013	2029	2030
Year Counter			1	2	3	4	5	21	22
Revenue from Operations			-	59.4	65.3	71.8	79.0	363.2	399.5
Other Revenue			-	2.6	4.2	6.3	8.9	212.4	242.0
Total Revenue			-	61.9	69.5	78.1	87.9	575.6	641.5
Op Cost				14.0	14.1	14.8	15.0	22.3	23.4
Annual Development Premium	5%	Increment	-	1.0	1.1	1.1	1.2	2.5	2.7
Administrative Expenses			-	1.6	1.7	1.8	1.9	4.4	4.6
PBDIT			-	45.3	52.7	60.4	69.9	546.3	610.8
Depreciation				9.67	9.67	9.67	9.67	9.67	9.67
PBIT			-	35.66	43.00	50.74	60.25	536.66	601.12
Interest on Loan				15.02	13.68	11.53	9.39	-	-
Int. On Overdraft Facility to P&L			-	-	-	-	-	-	-
PBT			-	20.6	29.3	39.2	50.9	536.7	601.1
Tax									

			-	2.34	4.42	8.96	13.95	185.70	207.61
PAT			-	18.3	24.9	30.2	36.9	351.0	393.5

Cashflow Statement

Financial Year Ending 31st March -----			2009	2010	2011	2012	2013	2029	2030
>									
Year Counter			1	2	3	4	5	21	22
INFLOW									
PAT			-	18	25	30	37	351	394
Depreciation			-	10	10	10	10	10	10
Equity			116						
Debt			116						
Total			231	28	35	40	47	361	403
OUTFLOW									
Capex			231						
Repayment of Debt			-		16.50	16.50	16.50	-	-
Total			231	-	17	17	17	-	-
Cashflow Cascade									
Casflow Available for DSRA			-	28	18	23	30	361	403
Debt Service Reserve Account									
Required Amt. In DSRA	6		8	15	14	13	-	-	

Op. Bal. of DSRA			-	-	8	15	14	-	-
Additions			-	8	8	-	-	-	-
Withdrawals			-	-	-	1	1	-	-
Cl. Bal of DSRA			-	8	15	14	13	-	-
Interest on DSRA to P&L	5%		-	0.38	0.75	0.70	0.65	-	-
Net Cashflow Post-DSRA			0.00	20	10	24	31	361	403
Less: Capex			231	-	-	-	-	-	-
Add: Equity			116	-	-	-	-	-	-
Add: Debt			116	-	-	-	-	-	-
Net Cash Surplus/(Deficit)			-	20	10	24	31	361	403
Cash Shortfall Borrowing									
Opening Bal. Overdraft Facility	0.50		-	-	-	-	-	-	-
Borrowings/(Repayments)	1.00		-	-	-	-	-	-	-
Closing Bal. Overdraft Facility			-	-	-	-	-	-	-
Int. On Overdraft Facility to P&L	14.0%		-	-	-	-	-	-	-
Net Cash Surplus/(Deficit) to Cash			-	20.5	10.5	24.5	31.2	360.6	403.2
Op. Bal Cash			-	-	20.5	31.0	55.4	2,403.7	2,764.3

Addition/(Reduction) to Cash			-	20.5	10.5	24.5	31.2	360.6	403.2
Closing Balance Cash	0		-	20.5	31.0	55.4	86.6	2,764.3	3,167.5
Interest on Cash Balances to P&L	5%		-	1.0	1.5	2.8	4.3	138.2	158.4

Balance Sheet

Financial Year Ending 31st March -----			2009	2010	2011	2012	2013	2028	2029	2030
>			1	2	3	4	5	20	21	22
Year Counter			1	2	3	4	5	20	21	22
Liabilities										
Equity			116	116	116	116	116	116	116	116
Balance Transferred from P&L			-	18	43	73	110	2,335	2,686	3,080
Networth			116	134	159	189	226	2,451	2,802	3,195
Debt			116	116	99	83	66	(0)	(0)	(0)
Total Term Liabilities			116	116	99	83	66	(0)	(0)	(0)
Total Liabilities			231	249	258	271	292	2,451	2,802	3,195
Assets										
Net Fixed Assets			231	221	212	202	192	47	38	28
DSRA			-	7.51	15.09	14.02	12.94	-	-	-
Current Assets										
Cash Balances			-	20.47	30.96	55.44	86.61	2,403.69	2,764.33	3,167.51
Total Assets			231	249	258	271	292	2,451	2,802	3,195

Annexure-IV

Typical design of an MFOB for a road of width 30m

